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ORAL CONDITIONS AS AFFECTED BY MODERN CIVILIZATION.*

BY EDWARD H. BAKER, M.D., CHICAGO.

What is civilization doing to man? Are its effects good or bad? If they are bad or dangerous to the life of the race, how can they be avoided or overcome?

These questions, of most vital importance to mankind, are scarcely given a passing thought by the average person.

For some years, I have been engaged in scientific research work, studying the influence of environment upon the cell, with especial reference to the effects of modern civilization upon man.

In the following paper, I shall discuss the action of certain factors of environment upon oral conditions.

It seems as if the jaws and teeth with their wonderful soft and hard tissues should be able to offer some very valuable and decisive evidence as to the real effects of civilization upon man.

The oral cavity is the atrium through which enter most of the substances which determine the life or death of the body.

The mouth, in which are performed the first acts of digestion, is possibly the governing factor in all the subsequent acts of digestion and assimilation. And, moreover, it is almost the only organ of the body whose condition of health or disease can be easily and accurately determined in a few moments by inspection.

It is remarkable to what a considerable degree the bodily conditions of health or disease are registered in the mouth. And even dentists do not appreciate fully enough the tremendous influence for life or death, which the conditions of the mouth exert upon the rest of the body. For, as will be shown later on, the removal of septic foci in the mouth, and the production of such an oral condition as will enable this organ to functionate properly, may at one sweep, eliminate causes of cell-fatigue which will lower the "fatigue-index" of the different body tissues from the danger-point of disease and death to the safety-point of good working efficiency.

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*Read before the Odontological Society of Chicago, October, 1911.

And the dentists' work, if effectively done, may, in a large percentage of cases, be the deciding factor as to whether a person contracts pneumonia; or having once contracted it, whether he shall get well or die.

Hence, instead of the dentist being a person of minor importance in the community, a mere "tooth-carpenter" as compared with the more brilliant and spectacular offices of the physician, it may turn out that his profession is even a more important one than that of the physician, both in the field of preventive medicine or hygiene, and in the field of curative medicine.

Now in order to establish certain principles, it will be necessary to take a few moments to go over certain points in the subject rather carefully.

Let us first take a fleeting glance at some well-known facts in evolution.

Two Factors of Evolution.

It is well recognized that there are two great factors acting in evolution,—*heredity* and *environment.*

Heredity tends to perpetuate the same characteristics, whereas environment may act to change these characteristics. For example, in a state of nature, if the winter is unusually severe, only the stronger animals will be able to survive. Those which survive will be the only ones to have offspring, and they will tend to transmit to this offspring their superior bodily characteristics.

Thus environment acts as a kind of sieve or filter which strains out the living organisms, destroying the unfit and leaving alive only those organisms, which by their peculiarities are fitted to exist in the new conditions of living. Thus, figuratively speaking, the size of the mesh determines the character of the organisms which live. Hence, we see the almost irresistible effect of environment, which by the brutal "survival of the fittest," has been an active factor in moulding the race to its present condition.

Now in order to get a more definite understanding of the action of environment, let us consider

Time Factors as Related to Environmental Influence.

To take a very general view of evolution, when we observe the great changes in form which have occurred, not in a few centuries, but in vast periods of time, we note the loss of parts which has occurred (e. g. reduction of digits, vertebrae, etc.). These lost parts are never re-acquired. Any part (such as a tooth, a digit, etc.), once lost, narrows the possibility of future plastic adaptations. Nature often overcomes this difficulty when the necessities of new conditions demand, by substitution of other parts or by change of function. But specialized organs can never again become generalized, because these lost parts are irrecoverable.[1]

As Dollo has shown,[2] evolution is thus irreversible, and while function can be reacquired it is by the adaptation of new parts, not by the recovery of lost parts.

This fact is well illustrated by the history of the dorsal fin, which in Protoselachians possessed cartilaginous supports; but these were lost entirely in later forms. Later, in Ichthyosaurus, a new dorsal fin is developed from the skin alone.

Another familiar example is the evolution of the foot of the horse. The perissodactyls and artiodactyls each branched off from some primitive ungulate ancestor. But after they were once started on this line of radial divergence from a common ancestral center, no perissodactyls have ever acquired the feet of artiodactyls, or vice versa, so far as we know.

P. Chalmers Mitchell[3] has shown this fact of the irreversibility of evolution and the determining importance of the first steps of divergence in any given direction by his studies on the Intestinal Tract of Mammals. He says: "But once any set of animals has come to occupy a particular radius, then, in that respect, its possible range of variation is limited and defined. Whatever influences come to work upon it, however the selection or the direct moulding of the environment may act upon the stock, the possibilities are limited and defined by the past history."

If we consider that this loss of parts has occurred in response to the action of environment, we see that the time at which an environment acts upon an organism is of the greatest relative importance, for a certain environment acting at a very early period may produce modifications of form or function which will affect the entire future development of these life forms, and limit or expand their possibilities of future adaptive evolution. Thus each stage of evolution to some extent predetermines the stages which follow.

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[1] Osborn, Henry Fairfield, Age of Mammals, N. Y. Macmillan & Co., 1910, pp. 15 and 34.

[2] Dollo, Louis, Les Lois de l'Evolution. Bull. Soc. de Belge Geol., Paleont., Hydrol., vol. 7, 1893, pp. 164-166.

[3] Mitchell, P. Chalmers, "On the Intestinal Tract of Mammals." Trans. of Zoolog. Soc. of London. Vol. 17, part 5, Dec., 1905, p. 535.

Morgan brings in this point when he says: "We assume a first variation arises through external factors. If it finds a suitable place, it survives."[4]

"After the first step, which was undirected, i. e., not purposeful, the subsequent events are rendered more probable; for the dice are loaded."[5]

Davenport, in speaking of the changes in the composition of protoplasm which are brought about through acclimatization to chemical agents, says: "The altered chemical constitution will be transmitted in the division of the individual, and thus the composition of the protoplasm of a race will have been determined by the medium in which it and its ancestors have been living."[6]

Regarding priority of time of occurrence of a given environment as influencing subsequent development, a good example is perhaps the ocean. Whether we consider that life originated in volcanic springs, or in fresh water, or on land, or in the ocean, or was created, or was introduced from some other planet, certain it is that the first records we find are of sea forms. Paleontological evidence seems to indicate that life continued to exist in the ocean for many millions of years until it began to emerge upon land about the beginning of the Devonian.

Now if the first ocean had been an ocean of wine instead of an ocean of sea-water, it seems evident that life forms could have been built up only if adapted to wine instead of to sea-water. E. g. The vinegar eel, rhabditis aceti, lives in a 4 per cent solution of acetic acid although this strength is fatal to most protoplasm; a 0.23 per cent solution of acetic acid kills the tentacles of Drosera.[7]

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[4] Prof. T. H. Morgan, "Chance or Purpose in the Origin and Evolution of Adaptation." Presidential address at the dinner of Am. Soc. of Naturalists, Boston, Dec. 29, 1909. Science, Feb. 11, 1910, N. S. Vol. 31, No. 789, p. 209.

[5] Ibid, p. 208.

[6] Chas. B. Davenport. Experimental Morphology, N. Y. The Macmillan Co., 1908, p. 51.

[7] C. Darwin. Insectivorous Plants. Appleton & Co., N. Y., 1875, p. 191.

Hence it seems likely that this early oceanic environment may have acted as a sort of mould which determined many of the fundamental characteristics of protoplasm. At any rate, although it is anywhere from twenty million to one hundred million years or more since our ancestors emerged from the ocean and began to take up their abode upon dry land, yet the impress of that early environment of sea-water remains so strong, so lasting, that today we are still walking sea-water aquariums, carrying around with us a portion of the ocean circulating in the blood vessels and tissues and bathing each cell.

As Loeb says:[8] "It is remarkable that the tissues of fresh-water and land animals, e. g., the frog, the tortoise, and apparently the mammals, live longest in a solution which has the same constitution as the sea-water, and differs from the latter only in its concentration."

However that may be, this primeval infancy of living matter, so to speak, with its superlative plasticity, has its prototype in the infancy of the different species as they successively evolve, and in the infancy of the individual.

The plasticity of early childhood, the readiness with which form may be moulded, functions disturbed and habits acquired, are too well known to need mention here.

Thus in the history of living protoplasm, in the history of races, and in the history of individuals, priority of time of application of an environment seems a most important factor in the determining of future characteristics.

Again, it is believed that the longer an environmental influence acts, the more determining will be its effects. Hence, if an attempt were made to formulate some of the prevailing impressions of scientists regarding the influence of environment upon evolution, these thoughts might perhaps be crystallized into the following general statements.

The importance of stimuli may depend upon:

I. Priority of appearance, or of time when these stimuli were applied to the organism of life forms. (The stimuli first acting or earlier acting upon an organism having supposably a more important or more formative influence than would later applied stimuli.)

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[8] Jacques Loeb. The Dynamics of Living Matter, p. 75, N. Y. Columbia Univ. Press and Macmillan & Co., 1906.

II. Length of time during which the organism was subjected to these stimuli. (The longer the duration of time, the more formative the effect upon the functions of the cells.) Also

III. Recurrence of stimuli at more or less regular intervals tending to establish habit or periodicity, which might depend upon:

(a) Regularity of periods of time at which the stimulus is reapplied. (The more regular the periods the greater the suposed effect in establishing a physiological habit.)

(b) The length of intervals of time between periods of application of stimuli.

(c) The duration of each period of application.

Perhaps, because our ideas have not hitherto been crystallized in any definite form, our thoughts relating to the influences of environment are apt to be rather vague, and factors which in reality possess very different grades of importance have sometimes been jumbled together and confused with each other.

For instance, taking any given environment, we might analyze it and separate the factors which have never before acted upon the organism or its ancestors, from the stimuli which have acted upon the cells of ancestors, and which might with propriety be called "primitive stimuli."

Major and Minor Factors of Environment.

Thus we might divide primitive environmental influences into *major* and *minor factors.*

Major factors would be those which had occurred previously in the ancestral life history.

1. At very early periods (priority of time).
2. For very long periods (length of time), or
3. At such regular intervals as to establish periodicity.

Minor factors would be those which had occurred previously in the ancestral life history, but at:

1. Later periods.
2. For shorter periods of time, or
3. At such irregular intervals as would not tend to establish periodicity.

In dealing with the question of adaptation we are very likely to confuse these two classes in our minds and so gain an incorrect idea of the strength of influence which they are respectively capable of exerting.

While the latter class, the minor factors can often be ignored with impunity, the major factors on the other hand, cannot be ignored, and are possibly absolutely essential to good health and longevity.

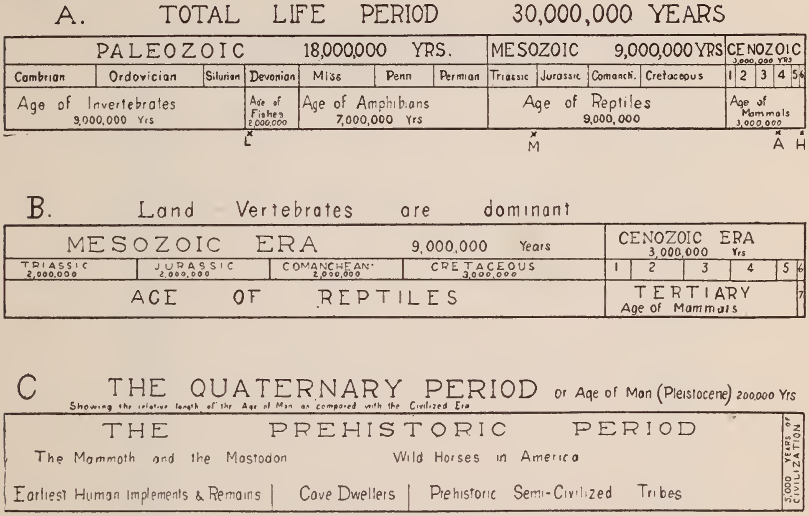

Fig. 1.

THE GEOLOGIC RECORD OF LIFE ON EARTH.

A.—Total Life Period. 1. Paleocene. 2. Eocene. 3. Oligocene. 4. Miocene. 5. Pliocene. 6. Pleistocene.

*L shows point in geologic strata in which are found the earliest fossiliferons records of land-life.

*M shows point at which earliest evidences of Mammalian life have been found.

*A indicates point at which earliest records of Anthropoid apes have been found.

*H shows point at which first undoubted human bones have been found.

B.—Shows the later geologic periods on a larger scale. Illustrates the relative length of the later geologic periods, as compared with the age of man.

1. Paleocene, 400,000 yrs.
2. Eocene, 750,000 yrs.
3. Oligocene, 700,000 yrs.
4. Miocene, 650,000 yrs.
5. Pliocene, 300,000 yrs.
6. Pleistocene, 200,0000 yrs.
7. Quaternary, or Age of Man.

For the purpose of illustrating the possible effect of the time factors, I have prepared the following charts. (See Figures 1 to 3.)

In considering the geological age of the earth, the total life period is variously estimated at from ten million to a billion years or more. Most of the estimates have hitherto ranged from twenty million to one hundred million years. But several new factors have been discovered of late which tend to greatly lengthen the possible life period. The most recent work shows the increasing probability of a life period of ninety to one hundred million years or more.

The total life period selected by me is thirty million years, following closely the most conservative estimates. It is very probable that the life period may exceed this many fold, but it was deemed best to avoid any criticism on account of great over-estimate of primitive time.

The division of geologic time is after Schuchert[9] slightly modified, his time-ratios being partly based upon Dana's estimates,[10] the time in years being based upon Walcott's estimate of 1893.[11]

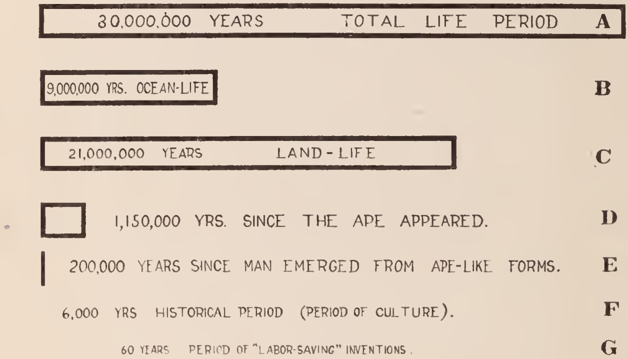

Fig. 2.

Shows comparision of life-periods under different conditions.

B. Life in the ocean was probably much longer than the time given here; probably it had existed in the ocean for over 100,000,000 years before it began to crawl out upon land.

E. The life-period of man is seen to be only 1/150 of the total life period.

F. This period which marks the time since man began to dwell in cities and show signs of becoming "civilized," is only 1/5,000 of the total life-period. It would be represented by a strip only .003 inch long.

G. The period of revolution of industrial methods is only 1/500,000 of the total life-period. It would be represented by a line 3/100,000 inch wide. It cannot be shown on this chart, as it would have to be multiplied 333 times to be visible to the naked eye.

It is not possible in the present incomplete state of the paleontological records to make very definite or close estimates. But the general effect in scrutinizing such a chart may be to enable us to draw certain inferences, even allowing for every possible variation in the accuracy of our data.

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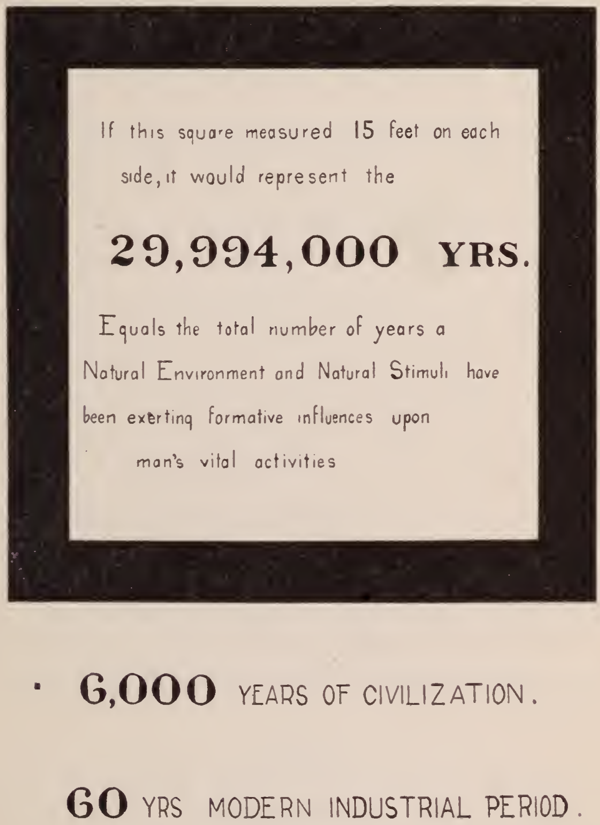
[9] Charles Schuchert, "Paleography of North America," Bull. of Geolog. Soc. of America, Vol. 20, No. 14, February, 1910, p. 600.

[10] Jas. D. Dana, "Manual of Geology." 4th ed. N. Y. Amer. Book Co., 1896, p. 1023.

[11] Chas. D. Walcott, Proceedings of Amer. Assn. for the Advancement of Science, Vol. 43, pp. 167-8.



If this square measured 15 feet on each side, it would represent the

29,994,000 YRS.

Equals the total number of years a Natural Environment and Natural Stimuli have been exerting formative influences upon man's vital activities

6,000 YEARS OF CIVILIZATION.

60 YRS MODERN INDUSTRIAL PERIOD.

Fig. 3.

Note the smallness of the civilized era in which an artificial environment has striven to change the functions and structure of body, brain and vital organs.

The Period of Inventions or Industrial Period, would be represented by 1/100 of the smallest dot that can be seen with the naked eye. During this minute period man has suddenly cut himself off very largely from the natural stimuli which had excited natural reactions in the cells of his ancestors for 29,999,940 years previously.

I have pointed out that environmental conditions which have been present since life first appeared upon the earth, or since very early periods in the evolution of a phylon, elicit a response from protoplasm which is very different from the responses elicited by new and unfavorable conditions to which the cell or organism has not yet had time to exhibit the responses of favorable adaptation.

New and adverse environments cause fatigue (particularly in highly specialized organisms), while old and accustomed environments cause reactions which are favorable to the life and health of the individual.

When, through too sudden and too overwhelming encounter of new and unfavorable conditions, the accumulation of fatigue products becomes very great, and there is not sufficient interval or time of rest to allow the fatigue substances and the products of abnormal metabolism to be oxidized and eliminated, the cells are often overwhelmed and die. Often the individual dies. In the past many phyla have doubtless been extinguished by such occurrences.

The colloidal matter of protoplasm is ordinarily in a "critical state" of very unstable equilibrium in which very minute changes in the environmental conditions may produce almost infinite effects on the protoplasmic condition and activities of the cell. This is especially true in the higher animals in whom the temperature of the body is constant at that of the critical state of the tissue colloids.[12]

Hence the enormous disproportion which often seems to exist between "stimuli" and their effects upon living matter. For example, a very small thing will often cause the death of a person, although with the crude methods at our disposal, postmortem and pathologic examinations fail to reveal any lesion which is apparently sufficient to cause death.

Fatigue.

In order to appreciate the importance of the facts which I have presented regarding the influence of time factors on evolution, and their practical bearings upon man's bodily health, particularly mouth conditions, it will be necessary to look at some facts concerning fatigue.

Prof. Irving Fisher says, in his report to the government on "National Vitality,"[13] "As Mosso[14] and others have proved, muscular fatigue is a chemical effect due to the circulation of 'fatigue poisons' in the blood. This has been strikingly shown by experiments by Weishardt and others on dogs, when blood is transfused from an exhausted dog to a 'frisky' one, the latter immediately wilts and becomes fatigued like the former, although he has not exerted himself in the least. In order to reduce fatigue, therefore, we should keep down fatigue poisons. It is not unlikely that almost all poisons produce fatigue, whether the poisons come from infections, from drugs, from impure or excessive food, from bad air, or from exertion."

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[12] A. V. Hill, Jour. of Physiology, Vol. 40, p. 224.

[13] "Report on National Vitality," prepared for the National Conservation Commission, by Prof. Irving Fisher of Yale University. Wash. Govt. Printing Office, 1909, p. 41.

[14] See "Fatigue," English translation, N. Y. (Putnam), 1904.

The ergograph is a simple but ingenious machine, invented by the great Italian physiologist Angelo Mosso, and designed for making accurate estimates of fatigue through muscular exertion.

Without entering into the question of its validity or of the various complex factors which one encounters in a study of fatigue, the results obtained by the ergograph illustrate sufficiently well the facts concerning fatigue to which I desire to call attention.

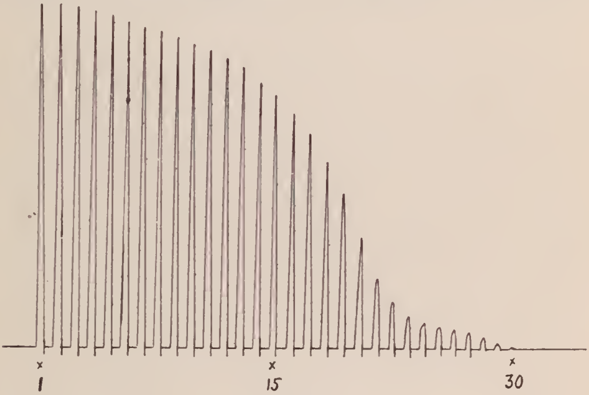

Fig. 4.
ERGOGRAPHIC TRACING.

The machine consists of an arm-rest in which the fore arm and the fingers are fastened. The hand rests palm upward and the middle finger is left free so it can be flexed upon the palm. To the distal end of the middle finger is attached a string, which passing over a pulley, lifts a weight. Thus, when the finger is flexed, it lifts the weight; and at the same time a pointer, scratching on a piece of smoked paper, on a revolving cylinder, shows the exact height to which the weight is lifted as the finger is flexed each time.

Figure 4 gives a typical tracing with the ergograph. Each upstroke from the base line is caused by a contraction of the finger.

Dr. Maggiora,[15] one of Mosso's pupils, by a series of careful experiments, determined the fact that he could contract the middle finger of his right hand thirty times, with a certain weight attached, and with a rhythm or interval of two seconds. It took him two hours to rest up sufficiently so that he could perform the same

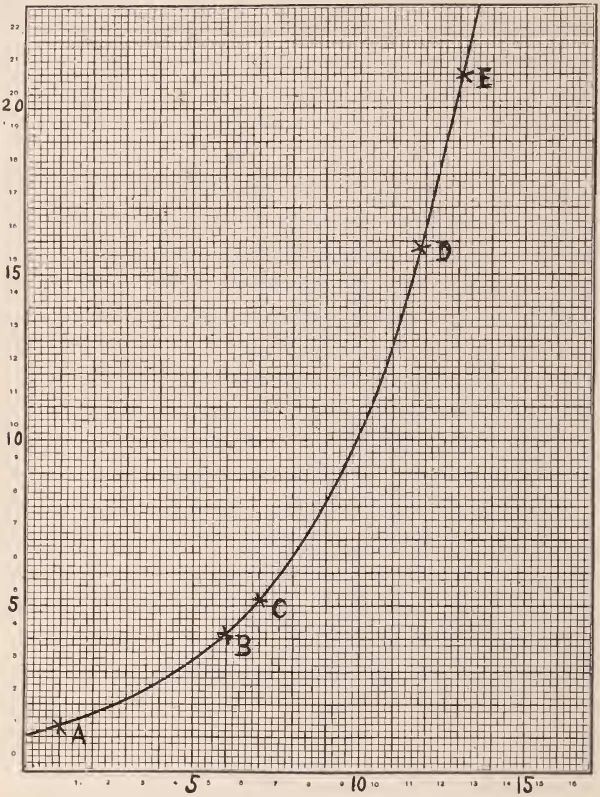

Fig. 5.

FATIGUE CURVE. (Schematic).

On this logarithmic curve, the units on the axis of abscissas show the Fatigue Causes (e. g. amount of stimulation necessary for a given amount of work performed in a given time, or length of time the stimuli are applied). The units on the axis of ordinates show the amount of fatigue (results of stimulation).

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[15] Maggiora, Dr. Arnaldo, "Les lois de la fatigue etudiee dans les muscles de l'homme." Arch. ital. d. biol. 1890, vol. 13, pp. 187-241.

number of contractions and produce the same curve again. But if he stopped at the fifteenth contraction he could rest up in half an hour.

Now the amount of work done is equal to the weight raised multiplied by the height through which it is raised.

In the tracing in Figure 4 the weight (5 pounds) was raised in the first fifteen contractions to a total height of 39.88 inches, or 3,323 feet. Multiplying 3.323 feet by 5 pounds, we have 16.615 foot-pounds as the amount of work actually performed in the first fifteen contractions.

In the last fifteen contractions the weight was raised to a total height of only 10.43 inches, or .869 feet. Multiplying this by 5 pounds we get 4.345 foot-pounds as the amount of work actually performed in the last fifteen contractions. This is only a little over one-fourth of the amount of work performed in the first fifteen contractions.

Hence, by stopping at the end of the first fifteen contractions, about three-fourths of the work was done, and the rest necessary (one-half hour) was only one-fourth of the total time of rest (two hours). Whereas, to add on the other one-fourth of the work, three-fourths of the time is necessary to rest (viz., 1½ hours).

Let us take the unit of fatigue as the average amount of time necessary to rest, per foot-pound of work done. We then have what we may for convenience term the

Fatigue-Index $= \dfrac{\text{Time of rest}}{\text{Foot-pounds of work done}}$; which in this case would be $\dfrac{.5 \text{ hour}}{16.615 \text{ ft.-lbs.}} = .03009 =$ fatigue-index for the first fifteen contractions; and $\dfrac{1.5 \text{ hour}}{4.345 \text{ ft.-lbs.}} = .345 =$ the fatigue-index of the last fifteen contractions.

In other words, the fatigue-index is over eleven times as great for the last fifteen contractions as for the first fifteen contractions.

This illustrates the fact that the curve of fatigue (see Figure 5) is of the form of the auto-catalytic curve. For example, in the oxidation of linseed oil the intermediate products of oxidation act as catalyzers, which increase the speed of the reaction, and the rate of oxidation increases.

Now this is just what occurs in the body in regard to fatigue. Each increment of fatigue added to the general sum, increases the general fatigue out of all proportion to the cause.

Figure 6 illustrates very well the increase in amount of fatigue of a cell, with each equal added increment of fatigue poison which attacks it.

We can now understand the danger of the constant presence of infected and foul food material such as occurs in bad oral conditions where dental work is absent, or where the mechanical work is ill-fitting and clumsily done.

The constant swallowing of pus in pyorrhea cases causes a systemic poisoning, and such cases not infrequently show a very marked gain in weight and physical health when good dental work and proper treatment have checked the pyorrhea.

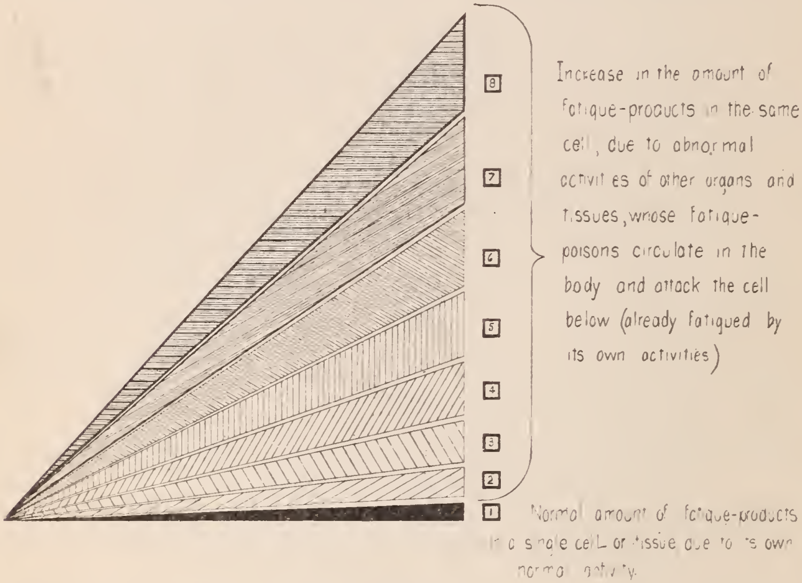
8
7
6
5
4
3
2
1
Increase in the amount of fatigue-products in the same cell, due to abnormal activities of other organs and tissues, whose fatigue-poisons circulate in the body and attack the cell below (already fatigued by its own activities)
Normal amount of fatigue-products in a single cell or tissue due to its own normal activity.

Fig. 6.

FATIGUE OF A CELL.

The numbered squares represent the successive increments of fatigue-stimuli as being equal; but their results are (as shown by the shaded strips), out of all proportion to the cause.

By reference to Figure 5 again we see that a lessening of one unit of fatigue-causes, at point E on the right hand side of the curve, produces a drop of 4.1 in the fatigue-index. Whereas at the point C a lessening of 1 unit of cause only produces a drop of 1 in the effects or fatigue-index; and at the point A, a lessening of 1 unit produces a drop in the ordinate of only .3.

This simply shows that a given amount of dental work applied in cases where the oral and systemic conditions are very bad, will produce a much more marked improvement in the general bodily health than the same amount of work done in the mouth of a person in much better condition.

This is well illustrated in the case of school children whose teeth are in very bad condition.

Dr. W. G. Ebersole of Cleveland, O., says that experiments conducted upon a class of twenty-seven school children showed an average increase in working efficiency of 99.8 per cent, based upon psychological tests.[16]

Practical Bearings as Regards Health.

My experience with patients has been rather interesting from a dental standpoint. In the treatment of patients during the past seven years, I have avoided the use of drugs almost entirely. I gave careful, systematic attention to diet, exercise, proper mastication of food, fresh air, and other more complicated treatment which I have since found to be in scientific accord with the principles mentioned here. The results of these methods were that I greatly bettered the condition of general health, and frequently cured serious disorders which failed to respond to the old experimental plan of treating with drugs.

I can now understand why the dentists to whom I sent these patients for attention said that the gums of my patients reacted better than those of any other patients who came into their offices. Apparently this was because by eliminating drugs the products of indigestion and of a faulty metabolism generally, the constituents of the blood and the tissues of the gums were relieved of much of their fatigue, and their working efficiency became greatly augmented. In other words, attention to general bodily hygiene lowered the fatigue-index.

This applies not only to the resisting power of the gum-tissue, the blood, etc., but to the nerves as well. A nervous patient who is poisoned by various fatigue products will become so excitable as to nearly jump out of the chair under the most careful dental manipulation. Whereas the same patient, in better physical condition, with many of the causes of cell-fatigue removed, and with a lowered fatigue-index, will sit quietly under great provocation.

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[16] See preliminary report by Miss Cordelia L. O'Neill, principal, in Dental Cosmos, Dec., 1911, p. 1393.

Now in treating the sickness of an animal or plant, in trying to secure for it healthful conditions of living, the first question to be considered is its nature. What kind of an animal or plant is it? What are the conditions under which its ancestors have lived and thrived?

So in endeavoring to secure a condition of health in man, the first question to decide is,

What is the nature of man? We have only just begun to consider this question. Metchnikoff's recent book[17] on the nature of man is an attempt to understand man's possibilities of life and health. But up to the present time we have not used the same common-sense, to say nothing of science, with regard to man as we have in the treatment of a fish or a horse or a plant. We would not take a fish out of water and expect it to breathe air instead of water. We would not expect a salt-water fish to thrive in fresh water, or vice versa. But we do expect man to live in any new conditions which we invent, without any regard to his ancestral history, without regard to the fact that the adaptations which he exhibits have been the slow growth of tens of millions of years.

Yet I believe that by all indications, the time is coming when medical practice will no longer be entirely empirical; when, instead of the best methods being experimental, they will be based upon well known laws of operation of the human body. But because we know so little as yet, and because the medical practice of today is just emerging from the stage of barbarism, the physician of today, of necessity, treats his patients as though they had just been created —as if they had no long line of ancestors extending back for many millions of years. He has scarcely realized as yet that man has inherited definite physiologic and anatomic possibilities which are just as fixed and as limited as are the functions of the fish or the horse.

We have been deceived by the fact that man's body is a generalized structure. His specialization lies in his brain. The whale, for example, is a much more highly specialized mammal than man.

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[17] "The Nature of Man," by Elie Metchnikoff, N. Y. & London, G. P. Putnam's Sons, 1907.

It is owing to the body of man being so generalized in its structure that he is able to adapt himself so readily to different temporary conditions of living. But there is a limit to his possibilities of sudden adaptation. And this paper points out some of these limits and the results and penalties which follow a disregard of the nature of man.

I have shown elsewhere that man and his ancestors have been subjected to the stimuli of a natural environment from the first appearance of life on this earth many millions of years ago, until the rapid progress of the industrial revolution, increasing in geometrical progression, has within the past twenty to forty years caused so many of us to become dwellers of large cities.

Today, factory whistles, automobiles, smoke, grime and noise have replaced the beautiful quiet surroundings of a simpler country life.

The curves representing the transition from the surroundings of primitive life to those of modern civilization have recently become so steep that there has not been sufficient time to allow of gradual adaptation.

As a result of this too sudden increase in inventions and artificiality, it is possible that modern man is being overwhelmed. The constant unremitting action of unaccustomed, unpleasant and harmful stimuli, the almost total absence of accustomed stimuli, are producing a physiological effect which shows signs of becoming very serious, perhaps to the degree of utter extinction of the race.

While acclimatization to poisons or to new and difficult conditions, may sometimes take place in a comparatively short space of time, there is a limit to the strength of the unfavorable agent to which the protoplasm can safely be exposed. If it is too strong the cell dies or fails to develop properly. If the change of environment instead of being a slow process, one in which perhaps centuries pass before any appreciable change occurs, should become too sudden in a short space of time, the individual organism succumbs and the race dies out.

Dr. Donaldson has shown in his great work on "The Growth of the Brain," that the nervous system is impressionable by nearly everything in our environment.[18]

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[18] H. H. Donaldson, "Growth of Brain," p. 284. Also Am. Text Book of Physiology.

This fact, that stimuli which produce no apparent reaction do, in reality, produce an effect, is shown by Yerkes' work on "Hearing in Frogs,"[20] and by the work on reinforcement of the knee-jerk or tendon-reflex[19] by the most slight and trivial sounds, sights, odors, etc., also by Mosso's work with the phthysmograph on sleeping persons.[21]

Mosso has also shown that the more fatigued we become the more impressionable and excitable the nervous system becomes.[22]

Mosso quotes Kronecker's work as showing that it is not the work which causes fatigue, but the stimulation.[22] [23]

Howell[24] says that the fatigue curve of muscle, caused to contract by electrical stimulation, "illustrates in a striking way one of the general characteristics of living matter, namely, that every effective stimulus applied to it leaves a record, so to speak. The muscle in this case is in a changed condition after each stimulus, as is indicated by the difference in its response to the succeeding stimulus."

It has been shown that motor reactions under unpleasant stimuli are different from and opposed to motor reactions under pleasant stimuli.[25]

Now if there is sufficient opportunity to rest, the fatigue-products which are formed may be oxidized and destroyed. If, however, there is not sufficient opportunity to rest, the fatigue-poisons may kill the protoplasm.

All curves which show vital activities, as they approach and enter the death-process of "irreversible reactions," will illustrate the fact that as the point of maximum stimulation is reached, a very slight additional stimulus suffices to kill the protoplasm. This furnishes a very good illustration of the old saying that "it is the last straw that breaks the camel's back."

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[19] Ibid, p. 286.

[20] Robt. M. Yerkes. Jr. of Comp. Neurol. & Phychol., vol. 15, No. 4, 1905, pp. 279-304.

[21] A. Mosso, "Fear," p. 78, transl. by Lough & Kiesow Longmans, Green & Co., N. Y. & London, 1896.

[22] A Mosso, Fatigue, transl. by Drummond.

[23] See Kronecker's research done in Ludwig's Laboratory, "Ueber die Ermudung und Erholung der quergestreiften Muskeln." Arb. a. d. Physiol. Anst. zu Leipzig, 1871, S. 177.

[24] "A Text Book of Physiology," by Wm. H. Howell, 3rd ed., p. 35, Phila. and London, W. B. Saunders & Co., 1909.

[25] G. V. Dearborn and F. N. Spindler, "Involuntary Motor Reaction and Unpleasant Stimuli," Psycholog. Review, 1897, Vol. 4, p. 453.

See Figures 7 and 8.

It will be noted that all activities of living matter, when they enter the death-process of so-called "irreversible reactions" apparently have a much steeper curve of declination than the rising curve of normal vital reactions, whether the activities concerned be due to changes of

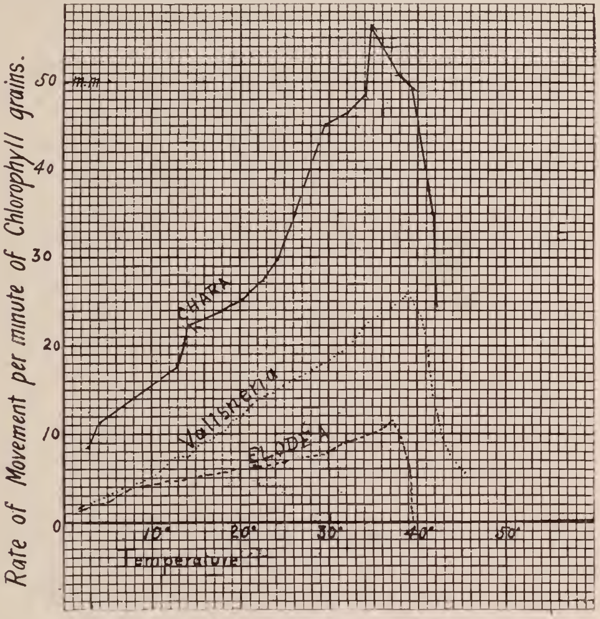

Fig. 7.

Curves showing the relation between temperature (abscissae) and rate of movement per minute of the chlorophyll grains floating in the protoplasm of the cells of three species of green plants. (Data from Velten, '76.)
[From Experimental Morphology by Chas. B. Davenport, p. 226.]

Reaction velocity,
Solution tension,
Osmotic pressure, or
Surface tension.

I have constructed a schematic curve of vital activity, which is shown in Figure 9.

It is evident that an additional stimulus of 10 at the point A or B produces a much less harmful effect than a stimulus of 1 applied when the reactions of the protoplasmic substances have already reached the point D or E.

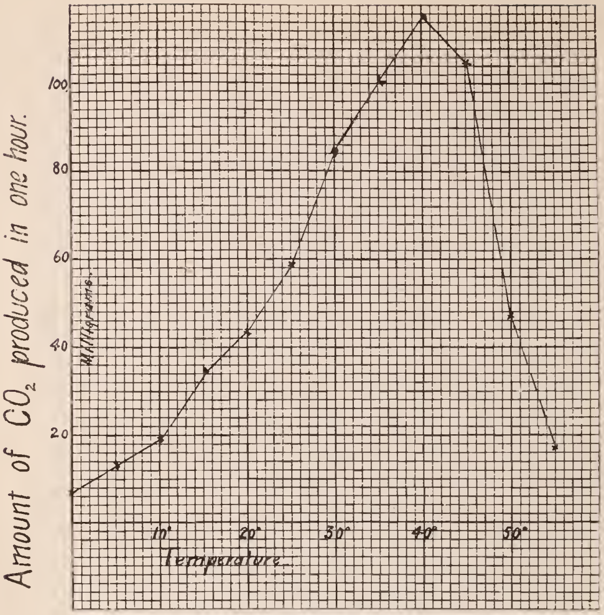

Fig. 8.

Influence of Temperature upon CO_2 production by seeds of Lupines. 100 grams of seeds produced above amount of Milligrams of CO_2 in one hour, according to Clausen.

[Jacques Loeb, Dynamics of Living Matter, p. 108.]

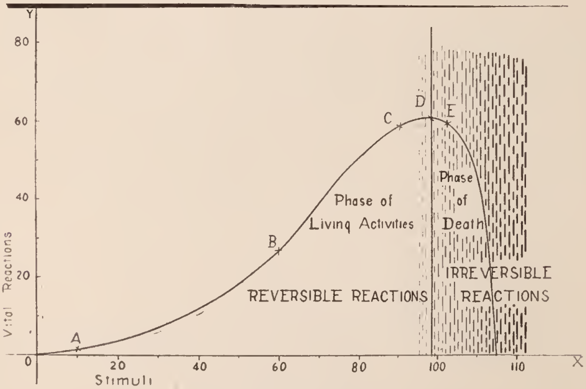

Fig. 9.

CURVE OF VITAL ACTIVITIES. (Schematic.)

Axis of Ordinates=Vital Reactions.

Axis of Abscissas=Stimuli (quantity of stimuli, or length of time of application of stimuli).

Now we note that starting about 1800, and attaining considerable proportions about 1870 to 1880, was the industrial revolution. Previous to 1800 nearly everything was made by hand. About and soon after this time, the invention of many "labor saving devices" began to change all our activities. Before that time, although many people lived in large cities, they still lived the simple life to a large degree. The natural relationships between raw materials, the workman, and the products of labor, were largely undisturbed. But nowdays a factory workman never sees the raw material as it is produced. He tends a machine, perhaps one of 100, each doing its small specialized portion of the work. He never sees the finished product. He does not sell it. He perhaps never sees his employer.

The introduction of steam engines, electricity, gas, street cars, railroads, elevators, automobiles, telephones, steam-heated flats, delicatessen stores, etc., have done away with the necessity or opportunity to walk or exercise much in the fresh air of outdoors, or in the home. Everything is becoming "specialized," and each individual is rapidly tending to become more and more of an automaton *with an inactive body and an overtrained brain.*

This change came about very suddenly. It is said that in the fourteen years from 1870 to 1884 there was a diminution in the amount of manual labor required to do a given piece of work of no less than 70 per cent.[26]

In the first annual report of the U. S. Commissioner of Labor,[27] published in 1886, we read that: "To do the work, now accomplished by power machinery in our mechanical industries and upon our railroads, would require men representing a population of 172,500,000 in addition to the present population of the country of 55,000,000, or a total population with hand processes and with horse power of 227,500,000, which population would be obliged to subsist on present means."

Since labor-saving devices and power-driven machinery began to appear a little over 100 years ago, great changes have been brought about in man's environment. These changes have been most marked within the past twenty to forty years.

And scarcely any of us realize how completely sense-stimuli which are new and unaccustomed have supplanted the old environment to which our ancestors have been subjected ever since life began on the earth over thirty million years ago.

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[26] "Adolescence," by G. Stanley Hall, Vol. 1, Chap. 3, p. 166.
[27] p. 87.

Food has been largely altered, physical exercise has been largely abolished, fresh air is breathed only by the country dwellers, and by them only when out of doors.

The scent of wild roses and green things in the forest have been replaced by vapors of gasoline, sewers, street dust and smoke.

The clear blue sky and green fields are replaced by the monotony of city streets and murky smoke-clouds.

The feet which formerly trod the soft turf or the unevenness of roads or paths in field and woodland, now press the hard level pavements of city streets.

Hardly any of the factors which acted upon our ancestors for twenty or thirty million years past, act upon us today. And on the other hand we have suddenly subjected our bodies to new and trying influences which our ancestors never before encountered since the world began.

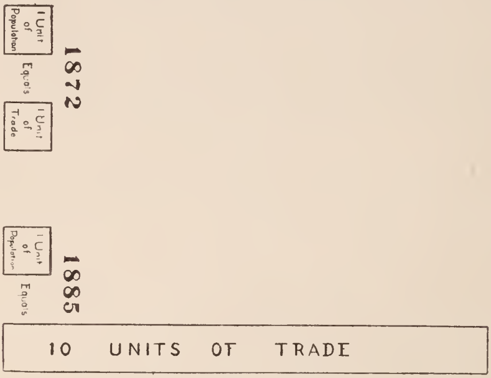

Fig. 10.

Illustrates the tremendous Growth of Trade in Germany in the 13 years between 1872 and 1885. This is a fair sample of what has occurred in all civilized countries.

The delicate flavors of natural food have been exchanged for the spices and condiments of cooked food.

We have the discouraging effect of pie and sinkers. The soft sweetened breads of the lunch counter, washed down with syrupy coffee, have replaced the nuts, wild berries, and hard natural foods. The latter, besides exerting a powerful developmental influence upon the teeth themselves, upon the muscles of mastication, the alveolar structures, the jaw and gingival tissues, are also powerful sialogogues, and increase the quantity and quality of the salivary secretions, and also are natural excitants of digestive juices and of peristalsis.

But when we contrast the effect of hard natural food and its healthful stimulation of digestive structures and functions, with the constant depleting effect of mushy food, when we contrast the effects of cool spring water with alternations of ice water, hot coffee, ice cream and strong alcoholic drinks, we must conclude that if there is anything in this theory of cell fatigue, the mouth structures are exposed to an excess of it, and their fatigue-index must be very high indeed.

And if there is any part of the body which needs a change of environment, a change from present intolerable conditions, it is that first and most important organ of digestion, the mouth.

I have gathered here as illustrations, charts of several of the new and sudden factors of present day civilization which have begun to act upon the race within the past and present generation.

See figures 10 to 14.

G. Stanley Hall, the great psychologist, and president of Clark University, in his work, "Adolescence,"[28] says:

A vast body of evidence could be collected from the writings of anthropologists showing how superior unspoiled savages are to civilized man in correct or esthetic proportions of body, in many forms of endurance of fatigue, hardship, and power to bear exposure, in the development and preservation of teeth and hair, in keenness of senses, absence of deformities, as well as immunity to many of our diseases."

Now if this statement about the teeth of savages is true, and if civilization causes poorer teeth, I wish to ascertain whether the oral conditions as they grow worse, correspond with the auto-calalytic curve of civilization.

Prof. Irving Fisher[29] states that the mortality from many of the diseases of later life has been and is on the increase. The death rates from diabetes, heart disease, and Bright's disease, have all doubled in thirty years. Cancer is probably on the increase. In addition, there may be mentioned other diseases, arterio-sclerosis, nephritis, apoplexy, paresis, disorders of the liver, and all manner of degeneration, all of them maladies of adult life, and all of them apparently tending to increase."

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[28] "Adolescence," N. Y., D. Appleton & Co., 1907, Vol. 1, Chap. 3, p. 169.

[29] Report on national vitality, p. 27.

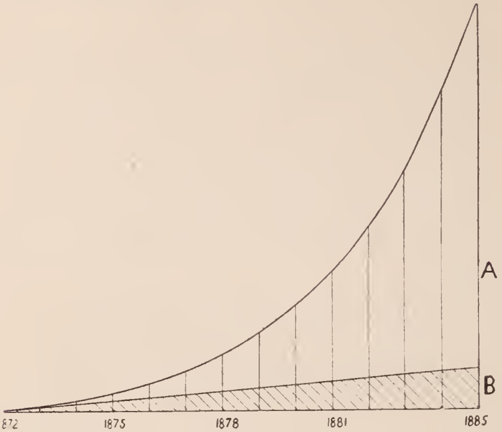

Fig. 11.

Shows growth of trade in Germany, compared with growth of population in years 1872 to 1885.
B (Lower shaded area) = Population.
A+B (White and shaded areas together) = Trade.

It is also claimed that insanity and nervous diseases are increasing.

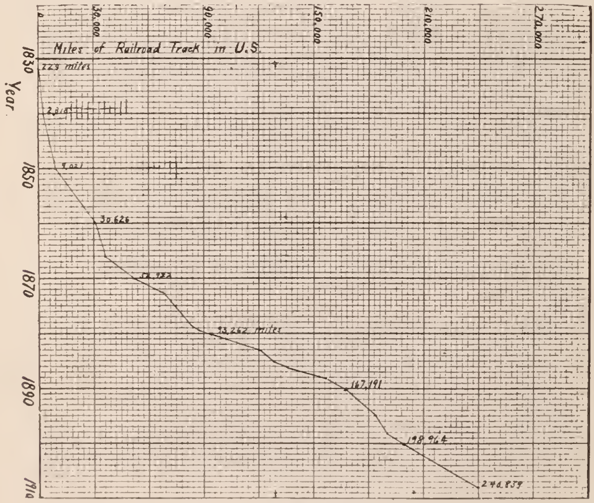

Fig. 12.
RAILROAD MILEAGE IN UNITED STATES.

Prof. Fisher further says: "Habits of living among adults have even grown worse in some respects. Observing practitioners comment on the increasing nervous tension in modern life. The rush of the railway train, the telephone, the elevator, are at once an outgrowth and an excitant of this increased tension. They are life's pace makers, and the pace is ever quickened. The health officer of New York City attributes to this severer strain the increase of heart and nervous diseases. It would be interesting to know the relative prevalence of adult diseases under conditions of reposeful and exciting surroundings and occupations, but I know of no investigation on this phase of the subject.[30]

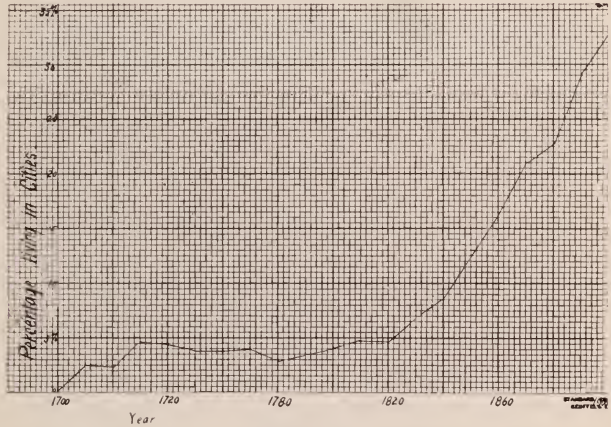

Fig. 13.

GROWTH OF URBANIZATION IN UNITED STATES.

Per cent of total population of United States in cities of 8,000 population and over.

[From "A Century of Population Growth," Diagram 2, pp. 14 and 15, U. S. Bureau of Census.]

But however true the showing of these statistics may be, it is not as yet conclusive.

Uniform registration of the causes of death in the different states is as yet too new and physical diagnosis by physicians lacks uniformity as well as skill, and so leaves some doubts as to the interpretation of the statistics so far available.

However, there seems to be considerable evidence that the race is deteriorating and changing.

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[30] Ibid, p. 98.

Among the most important facts so far available is the research work recently carried on for the United States Immigration Commission by Prof. Franz Boas of Columbia University, the foremost anthropologist in the United States, on the measurements of the skulls of immigrants.[31]

His work has shown that the conformation of the skull, which is supposed to be part of the body least responsive to environment, is markedly changed in one generation by the sudden transition to a new and unaccustomed environment. See Fig. 15.

The skulls of children born in this country differ from those born in the old country. The longer the mother has been in this country at the time of the birth of the child, the more marked the change in skull.

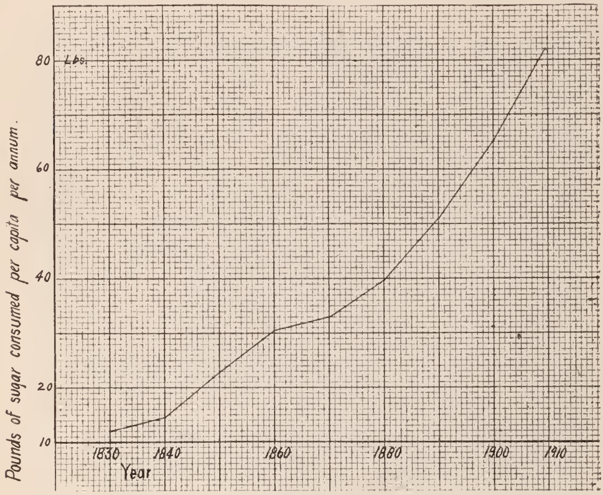

Fig. 14.

INCREASE IN CONSUMPTION OF SUGAR IN UNITED STATES.

Now before I ask the questions regarding certain evidence which the dentists may be able to supply, I may state that when I first acquired an acquaintance with dentists, because of my connection with Parke, Davis & Co. some fifteen years ago, I was impressed with certain mental traits in which they differ markedly from physicians. Among other things, it seems to me that dentists are, as a rule, because of their natural mechanical turn of mind, much closer and more accurate observers than physicians. They are possibly, as a class, less hide bound, and more open-minded to new truths than are my own profession.

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[31] Senate Document No. 208. The Immigration Commission. "Changes in bodily form of descendants of immigrants," Washington, D. C., Govt. Prtg. Office, 1910.

However that may be, it is certainly true that while medicine is only just emerging from the stage of ignorance and superstition, and is hence still in the stage of experimentation, its best methods being still empirical, dentistry, on the other hand, has already got one foot (or hand) upon solid ground.

Dentistry lies in three fields—mechanical, physiologic and pathologic. The latter two are in a great degree dependent on the former.

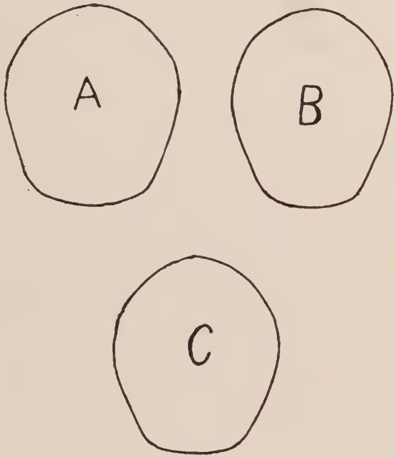

Fig. 15.

SHOWING CHANGES IN CONFORMATION OF SKULLS OF IMMIGRANTS.

A—The average form of the head of the foreign-born Hebrew.

B—The average form of the head of the foreign-born Sicilian.

C—The average form of the head of the American-born Hebrew and Sicilian born more than ten years after the arrival of the mother in America. These sketches are intended only to give an impression of the change in proportions. They do not represent the head forms in detail.

[From "Changes in Bodily Form of Descendants of Immigrants," p. 11. Senate Document No. 208, Wash D. C., 1910.]

The mechanical side of dentistry is already far advanced, and at the present rate of progress it must soon have reached a very high degree of efficiency.

In this respect, it is far ahead of medicine, which (aside from surgery) knows only too little of the mechanics and physics of the human body.

We have only recently realized that an understanding of the great facts of cell activity must be sought in the domain of physical chemistry.

Now dentists are daily making observations on an important part of the body which is easily observable.

The heart, liver, kidneys, stomach, intestines, etc., cannot be seen. Their condition of health or disease cannot be very accurately diagnosed, and there are no very definite standards of measurement as to their condition even if it could be observed.

Hence it is that I have turned to dentistry to see if it can furnish the definite unquestionable proofs for which I am seeking.

1. Were the teeth of primitive man better than those of today?
2. Were the teeth of our ancestors of 50 or 100 years ago better than those of today?
3. Was pyorrhea less frequent formerly than now?
4. How about deformities?
5. Are the teeth of the children of today worse than their parents?
6. Is there a marked difference between the teeth of city dwellers and those of country dwellers?
7. Is it true that it is common for the teeth of immigrants from certain countries to give out within a year or so after arrival in America?
8. Can it be ascertained whether there is any marked difference between the oral conditions of children born abroad and those of the same nationality born more than ten years after the arrival of the mother in America?
9. How can we gather facts or proofs of any of the above?

THE PERMANENT RESTORATION OF PIERCED CAVITY FLOORS.*

BY WILLIAM HIRSCHFELD, D.D.S., PARIS, FRANCE.

Mr. President and Gentlemen:

If through disease or, as is more frequent, through indiscriminate drilling a hole has been made between the roots of a molar or an upper bicuspid, it is generally just that tooth which we feel most important to keep and when we treat it, we want to be sure that no irritation will be caused by the filling.

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*Read before the American Dental Society of Europe, 1911.

The materials which up to the present are taken in consideration for such lesions, are gutta-percha or metals like gold, tin, platinum, lead in form of foil.

To discuss the merits of these different substitutes—before experienced practitioners as you all are, is certainly not needed. Be it sufficient to state that gold or leadfoil have that great advantage over cement or gutta percha that we can control their employment. By this I mean, we have it in our power to place these metals in such a way over the injured part that we can prevent the foil from protruding into the soft tissues which with gutta percha or cement is next to impossible. The fact that bullets remain for any length of time in the human body without causing damage has proved that lead is tolerated by the organism and should therefore be employed in preference to any other material. But suppose that lead, taking it merely from the point of view of its chemical action, is the ideal material (which in reality it is not) to remain perfectly neutral in its contact with the mucous membrane, still an operation performed with it after the usual method must fatally lead to a failure and that owing to an initial error of reflection on part of the dentist.

With our way of applying lead—or gold foil have we made the first attempt to restore the cavity-floor to its former shape? In other words: In simply burnishing the foil against the opening, this opening of more or less irregular form, we leave it in its abnormal condition! Where the mucous membrane should touch on a smooth and even surface, we demand that it accommodate itself to broken or uneven enamel which in the course of time will become that same source of irritation which we constantly observe with hidden tooth cavities in shape of bleeding and sensitive gums.

Nearly in all cases which I have treated in this manner, I have met invariably with the same experience.—A pierced tooth carefully covered at its lesion with leadfoil would keep quiet for one or two years—perhaps even longer, but finally intolerable soreness or getting loose would force me to remove everything and in doing so suppuration would reveal its presence and mostly cause the loss of the tooth. After my present conviction these failures must be attributed less to a faulty material than to a faulty treatment. My attention to this particular point was called first by the description of a method published many years ago by the father of German dentistry, Linderer. His system is certainly somewhat empirical but it already contains the sound notion that the task of the dentist should consist in a practical restoration of nature. Linderer says:

"If you have to cure a pierced tooth floor take a drill of conve-"nient size and with it give a round shape to the hole. Then by "means of cotton-dressings during one or two days press the soft "tissues well out of reach. In the meantime have an ivory-maker "prepare you a round ivory-rod, corresponding in size to the drill "employed and close up your cavity with a suitable piece, forced "right into it." This idea of restoring nature seemed to me so reasonable that I have tried this system with a little modification however: in the place of ivory I used lead, thinking that lead would be easier tolerated by the mucous membrane. I experienced a marked improvement on the ancient foil-treatment, inasmuch as in the one particular case where I employed a lead-rod (after Linderer's idea) the tooth kept comfortable for fully three years, when soreness forced me to take out everything again. This happened a year ago with a single upper molar, the only one left on that side and which the patient, an elderly wealthy man, wanted to conserve under any condition in order to avoid artificial teeth.

On reflecting desperately what material could be used next to solve this problem, I suddenly thought of porcelain. We all know what an invaluable material porcelain is for extensive fillings below the cervical border, how well the gums take to it; you all will agree that no healthier condition of the mouth can exist than with porcelain, be it in the shape of fillings, crowns or bridges.

Another fact encouraged me to make researches in that direction: some of you will remember those two cases of porcelain roots, presented by Dr. Rhein of New York at the last international congress in Berlin. I was impressed at that time by the healthy appearance of the surrounding gums, a circumstance which led me to suppose that a porcelain plug even protruding into the alveolus might be tolerated just as readily as a porcelain root. Once having decided to try porcelain, the difficulty to surmount was now how to use it, and this, after considerable experimentation, I think I have overcome definitely in taking for our special purpose those round porcelain rods (I do not refer to the flat buttons) which you find at Ash's for the so-called Dale's Inlays.

With the strongest feeling of confidence in the success of this simple treatment, allow me gentlemen, to make as clear as possible the technical detail of the permanent restoration of these misplaced lesions. The first step is to change the broken part into a round slot by means of burs corresponding to one of the two smallest sizes of the porcelain-rods. These drills should be kept apart together with the rods, to be used for this and no other purpose. It goes without saying that they must be employed in an absolutely sterilized condition, which can be obtained by moistening them with carbolic acid. Now comes the isolation of the tooth floor from the mucous membrane by a twenty-four hours' cotton dressing saturated with a non-irritating antiseptic like oil of cloves and lactic acid.

In order to save time, cauterizing with trichloracetic acid will stop hemorrhage at once, but the great point is to work, not only under complete absence of blood, but particularly without coming into contact with the soft tissues. To gain this free space indispensable for a good result sometimes even a second day's dressing may be required; in larger defects gutta percha is preferable to cotton for this purpose. In the meantime we have to prepare our porcelain. The end of the rod must be slightly rounded off and this in view of its possible reaching into the alveolus. Indeed, although we intend inserting it flush with the tooth border we have to consider that we cannot control the rod to that extent and that a trifle may be bulging out; this free end should be left round to avoid sharp borders injuring the membrane. Another essential factor is the easy manipulation of the porcelain: if we would cut off right in the beginning that portion which we wish to use, we would have difficulty to get such a tiny plug into its proper place. To overcome this, it is well to mark with a thin corundum wheel the necessary part by a slight circular incision which enables us to break off the rod, once fixed, right where we want it.

In this regard, we may be tempted to leave the porcelain reaching far into the crown, with the idea to serve at the same time as an anchorage for the filling. This would be a mistake: we must not forget that any filling is fallible and thus the existence of the whole tooth may get compromised. It is better to leave the rod extending just sufficiently to be covered by cement and in that way form a new tooth floor independent altogether from the filling.

For the final setting, the rubber dam is of great necessity not only to operate under strictly aseptic conditions but to allow us the use of both our hands. Prior to its application, the cavity should be washed out with a warm antiseptic solution. The rubber dam in place, not enough stress can be laid on establishing absolute asepsis by heating the tooth with hot air. It is only with the faithful observation of all these details that we can think of fixing our porcelain. Theoretically this should stay in place without any cement, just like the pusher in a glass syringe; even practically we find the piece holding firm, but in spite of all care there exists a microscopical space between the slot and the filling which we must fill up with a quick setting cement.

If you put a little of it, mixed thin, around the sides of the rod, taking minute care to have the end free, you do not risk pushing any into the alveolus; the surplus, on the contrary will ooze out into the cavity; now place your rod into the slot, cover the bottom of the tooth with cement, let that get hard for a few minutes, break off your rod and you have your tooth floor restored to its natural condition with an absolutely inorganic substance.

To give you a clear idea of the finished operation may I kindly request you gentlemen to examine a few extracted molars, showing the piece in place and at the same time the porcelain rod as it should be prepared ready for immediate use.

Although we find these rods in sizes of sufficient diameter to fit nearly any defect we may come across occasionally a case where extensive caries has barely left the roots united. Here I suggest (on this I have no practical experience yet) a porcelain inlay constructed after the following principles: First of all do away with all fungous growths reaching into the cavity and frequently found in such large lesions. For this purpose our cotton dressings should be saturated with aromatic sulphuric acid; this alone may take several days.

Our operating field once perfectly clear the essential condition is now to get a round outline of the lesion by means of suitable burs; then a gold matrix is burnished over the whole cavity, bulging slightly into the free hole; burn on it a flat inlay and make on its periphery cuts all round to make it look like a star, care being taken not to touch the raised part. These incisions are meant for an easier hold of the plug and above all to facilitate a better union with the cement. The porcelain once all prepared place it in position and cover it with a layer of thin cement, which you must allow to harden before the definite filling of the crown. In this way we present to the underlying tissues a surface which comes nearest to the lost tooth-substance and which it not liable to provoke pathological reaction of any kind. This last operation may render great services for crowning badly broken molars with scarcely any dentine left between the roots; if this missing tooth floor is neatly restored by an inlay, and held in place we can construct on such a foundation a crown bound to remain perfectly healthy.

Gentlemen, in submitting this new idea to your appreciation its author is only too well aware that this system is lacking badly in one principal direction: the test of time; a successful period of at least five years, if not the double should have elapsed before speaking of a new suggestion as an unfailable unique method of practice. But if you examine impartially the different phases of this artificial restoration, you may likely come to the conclusion that the whole process is done in view to exclude every imaginable cause of irritation, under such conditions there seems to remain no apparent reason why teeth treated in that way should not keep comfortable for any length of time.

TAKING THE IMPRESSION.*

BY CARL KLEIN, D.D.S., CHICAGO, ILL.

When at last it becomes necessary to resort to the use of artificial dentures, the initial step granting that the mouth tissues are healthy is to make a cast of the parts to be covered by the base plates and for this we need first of all an impression. Having examined the mouth to get an idea of its approximate size and form we proceed to select a tray which conforms to its shape, being sure that the tray is at least an eighth of an inch larger in every direction than the part it is to inclose. The tray being made of soft metal can be bent, cut, filed or added to, some of which preparation being nearly always needed, and we always build a roll of wax along the posterior edge of the tray except in cases of soft tissue over entire maxilla, when it should extend around the entire periphery. Ordinarily this wax should be about as thick as a regular pencil and should be placed along the posterior edge of tray enclosing both tuberosities and pressed to place in the mouth while soft. It is essential that the tray fit the case and the battle is half won when this is accomplished, even though it become necessary to make a special tray of Ideal Base Plate Material, having first taken a fair impression for this purpose.

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*Read before the Chicago Dental Society, October 17th, 1911.

The patient being inclined to gagging we prepare a saturated solution of chloretone with which we ask patient to gargle for a minute which does away with any further trouble of this sort. In the choice of impression materials, plaster-of-Paris justly occupies first place though modeling compound and even beeswax are successfully used in some cases. But were we to be limited to the use of one material it surely would be plaster. Now to about one ounce or slightly more of water add a pinch of tablesalt or potassium sulphate as you prefer to hasten the setting of the plaster and into this sift enough plaster to cover all the water and agitate or spatulate until it results in a smooth mixture. We now transfer the batter to the prepared tray expeditiously, covering the entire maxillary surface flush to the edge and perhaps higher in the anterior vault part depending on the height of the arch and immediately place in the mouth and force to place pressing the posterior edge of tray to. place, and then gradually elevating handle of tray carrying plaster to all depressions. While maintaining firm pressure against the roof of the tray with one hand draw the lip down to mark the frenum and then draw down the angles of the mouth to mark the buccal frenum with the other hand and press the lip and cheeks against the plaster to compress the labial and buccal walls of the maxilla. As soon as the plaster breaks with a crystaline fracture and does not crush, which should be in about two minutes and can be tested by plaster remaining in bowl, remove the impression together with any pieces that have broken away. Fit these fragments carefully to the impression and fix with melted wax whereupon we are ready to shave or trim material enough to relieve any undue pressure upon the hard parts of the mouth, keeping in mind that the best results are obtained by uniform pressure besides absolute contact. We now coat the impression with a thin alcoholic solution of shellac and when this is dry a thin alcoholic solution of sandarac.

These varnishes should be thin enough to occupy no appreciable space, the shellac acting largely as a stain and the sandarac forming a glaze thereby causing a smooth surface on the cast. After soaking in water for a few minutes we are ready to fill this impression with plaster to form the cast and we do this by first shaking the water from the impression and then jarring small portions of plaster from the vault part down carefully, avoiding filling the small imprints with air. After allowing the plaster at least half an hour to harden we cut all overhanging plaster from tray, exposing its entire outer edge, heat the tray over a bunsen burner to facilitate its separation and with a few sharp raps remove it from the impression. This we proceed to shave along the crest of the ridge until the shellac stain becomes visible when the outer flange of the impression can be picked away and the remaining central part can be lifted out. Trim cast so that it will be about a half inch thick at its thinnest part. Shave the parts corresponding to the soft spots in the mouth to obtain the needed uniform pressure and after marking with a soft pencil the outline of the edge of the denture we are ready to make the base plate.

When taking lower impressions we make the mix of plaster slightly thicker and after placing in the mouth ask patient to protrude the tongue as far as possible, being careful that the tray does not catch a fold of the cheek under its buccal flange or that any part of the tray impinge upon a muscle. Then proceed as with an upper.

Summarizing briefly. In taking impressions use plentifully that much needed quality of mind in dental practice known as American Common Sense. Be scrupulously clean, use the best grade of plaster, a perfectly adapted tray, the proper quantity of plaster, carefully placed and removed at the right time; observe these particulars by any means your ingenuity may suggest, and you will succeed.

TAKING THE BITE.*

BY J. A. DINWIDDIE, D.D.S., LOWELL, IND.

There is no step in the construction of artificial dentures more important than that of securing the normal relation of the lower to the upper jaw, ordinarily called taking the bite.

Just what this normal relation is, depends greatly upon the ability of the operator to restore features that have been lost by absorption.

If we could take a measurement of every patient from the point of chin to a certain point on the frontal bone, and be able to keep a record of this, we could for certain reproduce in years to come, when it became necessary for this patient to wear artificial dentures the exact length of bite.

Models having been secured, the next step is the construction of base plates, which should be formed from some material that is rigid enough to retain its shape when subjected to the temperature of the mouth, as well as the stress which the base plates will be required to withstand in fitting. After securing the base plates which should be trimmed so as not to cause too much pressure on the muscles and soft tissues, a roll of wax about 10 mm. in diameter is placed around the ridge and directly over it. The buccal and lingual surfaces of the roll should be fastened to the base plate with a hot spatula. The surface of the wax representing the occlusal should be about 10 to 15 mm. broad, and this plane should be perfectly flat.

The writer does exceedingly well to follow methods and not originate them, so thinks the following division of steps as given by Dr. Prothero to be exceptionally good, and he divides the special steps into seven as follows:

First—Mark the proper length of lip on the wax rim. The wax should be trimmed if too long, or added to if too short, until it presents a natural appearance to the lip, extending usually about 1 mm. below the margin of the upper lip and the same above the lower lip when lips are just parted. If too long or too short it will be unsightly.

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*Read before the Chicago Dental Society, October 17th, 1911.

Second—Secure perfect and uniform contact of wax rim with opposing teeth or baseplate. The opposing wax or teeth should come in contact uniformly with the wax, so as to avoid tipping of the base plate. Failure in this will result in a poor occlusion of the finished plate.

Third—Restore facial contour. Is very important. Considerable wax should be added in the region of the cuspid eminences, but is entirely governed by the amount of absorption. The wrinkles which occur at the alae of the nose and extend to the corners of the mouth can often be removed by proper contour of wax. The building of a body of wax in the region of the molars is often necessary to restore facial contour.

Fourth—Median line of face. You cannot depend on the nose as being exactly in the median line, and observation has shown that it is nearly always deflected to the left, but it is necessary for one to strike an average of a line midway between the eyes and point of chin, and marking this with a sharp-pointed instrument in the wax rim of both base plates.

Fifth—Mark the high lip line. This refers to the position of the lips in laughing and is done by marking the wax at the margin of the lips. This will serve as a guide as to the proper length of teeth to be selected for the case.

Sixth—Establish normal relation of lower to upper. Chilling the base plates, inserting in the mouth, the operator standing in front of the patient, with the index finger and thumb resting on the point of patient's chin. Then by having the patient close the jaws several times until you find that with the pressure exerted on the point of chin causes the patient to bite in exactly the same relation or position on the wax. The rims of wax are then marked in this relation with a pointed instrument in the region of the bicuspids with a line extending across both base plates. Occasionally we find patients presenting themselves for dentures with mouths that have been for years without teeth, and in taking the bite they will persist in protruding the lower. To correct this the writer will tell the patient to endeavor to reach the heel of the base plate with the tip of the tongue, and close jaws together at the same time. This will either verify or correct the bite.

There are two steps which precede the application of the face bow and are necessary for the proper adjustment of the bow and must be carried out at this time. The first, locate the condyle ends, which are according to Dr. Prothero's measurement, usually about 12 mm. in front of the external auditory meatus, on a line horizontal with it. The ball of the finger is placed at this point and patient instructed to open and close mandible slightly a number of times. With care the head of the condyle can be located. Then mark this point with a soft pointed pencil so that later when adjusting the face bow the exact position can be readily found.

The other step is to remove the upper base plate, and after heating the crescent-shaped end of the face bow stem, force it into the wax rim sufficiently deep to secure the two firmly together, then return to the mouth and fasten the base plates together with the four pointed staples. The marks previously made on wax rims will give you the true bite. We are now ready for the seventh step—adjusting the face bow.

This appliance is for securing the relation of the alveolar planes to the condyles when the latter are at rest in the glenoid fossæ.

The large central clamp of the face bow is now passed onto the stem and the graduated rods are opposite the condyle ends, and are pressed in until they rest firmly against the points previously marked.

To facilitate the holding of the bow in the proper position, we are indebted to Dr. Prothero for a very ingenious device, which is attached to the face bow and has two points so shaped as to fit into the external auditory meatus, and by two set screws the bow can be raised or lowered, moved forward or backward, until the ends of the rods are held directly opposite the dotted mark on the face. His modesty forbids him to mention this appliance which is of very great assistance in the holding of the bow in the proper place. After having the bow adjusted and balanced, so that there will be the same number of gradations shown between the inner side of each arm and the face, the clamp nuts on each rod are tightened firmly, after which the central clamp is fixed to the bite stem, which completely establishes the correct relation between the alveolar borders and condyles.

The side clamps are loosened and patient instructed to open the mouth. By holding the bite stem firmly, the base plates are removed from the mouth.

Mounting the Models. The graduated rods are pushed in as far as possible and clamps tightened. They are then in correct position for engaging the projecting ends of the frame hinges, to which they are now adjusted, the bite plates being between the upper and lower bows of the frame. Upper bow is thrown back; upper model inserted into the bite plate, and fastened with plaster; frame turned over and the lower mounted. When plaster has hardened, unloosen central clamp nut, remove face bow and stem.

Recording of Condyle Path. This is accomplished in two ways, Christensen's method and Gysi method. Time will only permit the description of the first mentioned method.

The bite plates are returned to the mouth, and the Snow Bite gauges imbedded into the wax rim in the region of the lower molars, patient is instructed to protrude the lower slightly and close bite plates until the anterior portion of the rims occlude, being careful to have maintained the median line in the proper relation in both bite plates. They are now fastened together with the four pointed staples and bite plates removed from the mouth.

The nuts controlling the condyle paths of the occluding frame are loosened, the spring unhooked. The bite plates still in their protruded position, are placed on the lower model and firmly seated. The upper model is now moved backward and gently seated in the upper base plate, the slots representing the condyle paths will follow the movements of the upper model and assume the angle the condyle heads moved, in the protrusive bite. The nuts are now fastened which control the movement of the condyle path, bite gauges removed, spring hooked back, and the bite plates will assume the normal position as when first mounted.

This takes you up to the next subject—Occlusion.

It was not with the expectation of giving this society anything new, that prompted the writer to accept the invitation of the chairman of your program committee, but that he might impress upon your minds that all of this worked out is just one detail following another, and if the writer can influence only one member of this society to look after this important subject, and forget the mush bite, he is amply repaid for his effort.

OCCLUSION.*

BY J. E. SCHAEFER, D.D.S., CHICAGO, ILL.

A knowledge of anatomical occlusion presupposes an understanding as to the requirements of the articulator. We can all appreciate this fact, that if the articulator fails to reproduce the movements of the mandible and if the relation of the models to each other or to the articulator joint has been incorrect, we cannot expect to have our dentures articulate properly in the mouth no matter how perfectly we might have obtained this result in our occluding frame. Therefore, it is imperative that the condyle path be reproduced and the proper relation of the models be established.

We have at the present time two methods by which we can obtain all that is desired, with the assurance that dentures will articulate properly when tried in the patient's mouth. The one is the plan described by Dr. Dinwiddie, consisting of the Snow face bow and the 20th Century articulator. The other is a method devised by Dr. Gysi of Zurich, Switzerland. Dr. Gysi goes a step farther with his system, in that he determines the centers of rotation around which the mandible turns in its lateral movements and reproduces them on the articulator.

With Dr. Dinwiddie's permission I should like to digress slightly on what might be considered as included in obtaining the bite, and briefly refer to the difference between the two plans. By Dr. Gysi's method, both the condyle path and the position at which the casts are to be mounted on the articulator are obtained by means of one instrument called the Large Register. In some respects it is similar to the face bow, it differs however, in that it is used in connection with the mandible and obtains the relation of the lower model to the condyle joint while the face bow obtains the position of the upper model to the joint.

The large register is attached to the mandible by means of a horseshoe shaped plate which is held on the lower base plate by sharp points extending from its under surface into the wax. Parallel to the horseshoe shaped plate and on line with the occlusal plane are two horizontal bars carrying movable spring graphite points which in all cases are to be adjusted over the region of the condyles.

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*Read before the Chicago Dental Society, October 17th, 1911.

We will consider the instrument as being adjusted in the manner described with the graphite points in their proper position. A card is now placed on one side between the graphite point and the patient's cheek. It is held parallel to the occlusal plane. The patient is requested to move the mandible up and down, also from side to side until the path of the condyle is clearly traced on the card. (Slide 1.) After having obtained the path on one side, the same card is held on the opposite side and a similiar procedure carried out. The condyle path having been drawn on the card; the degree of inclination is determined in the following manner: A slotted plate corresponding in form to the registered path, is selected and placed over the drawing so that the slot in the plate is parallel to the path. The plate has a pin on its under surface which is pressed through the card and two points are then marked on the card with a lead pencil, at either extremity of the plate in line with its long axis. (Slide 2.) The slotted plate is now removed and a line drawn through both markings and continued to the lower margin of the card. (Slide 3.) The angle formed determines the degree of inclination of the condyle path. The slotted plate is transferred to the articulator and adjusted to the angle registered.

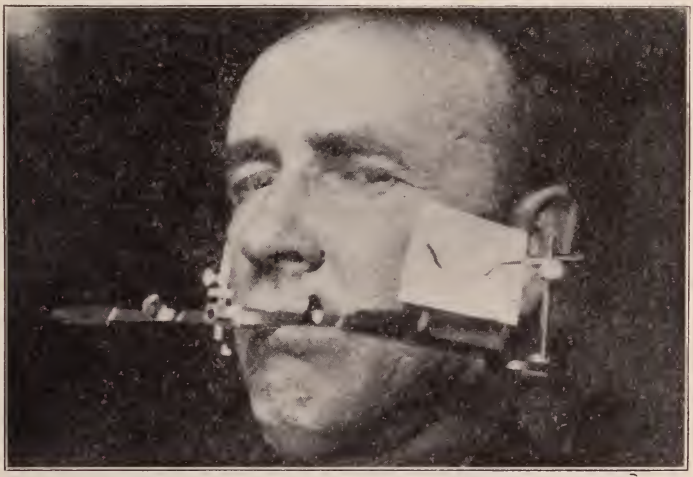

Fig. 1.

The centers of rotation around which the mandible turns in its lateral movements are determined by the path of the incisors. The incisor path is obtained by means of the small register. This consists of a pointed marker mounted on a spring which is placed in the upper bite plate directly over the median line. The point of the marker should extend about a sixteenth of an inch below the occluding surface of the upper bite plate. (Slide 4.) The forepart of the horseshoe shaped plate which is in position on the lower base plate is covered with a thin coating of dark wax. Both base plates are then placed in the mouth and the patient is requested to move the mandible from side to side. The point of the marker registers the incisor path in the coating of wax on the horseshoe shaped plate below. (Slide 5.) The importance of obtaining the proper rotation centers of the mandible and reproducing them on the articulator is illustrated by the following slides.

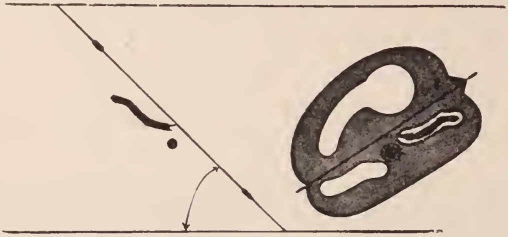

Fig. 2.

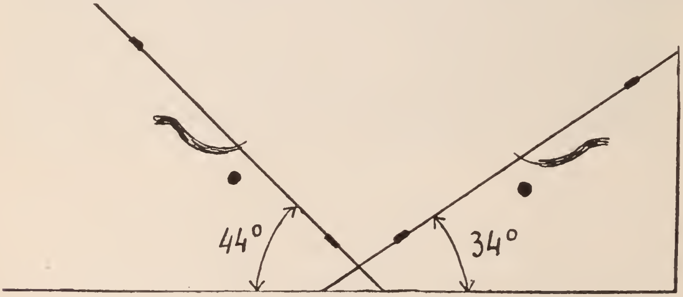

Fig. 3.

This drawing shows two incisor paths where the rotation centers are located at 7-13 centimeters, respectively. (Slide 6.)

The next slide illustrates cuspid interference where the rotation centers on the articulator differed from those possessed by the patient. (Slide 7.) If the proper rotation centers have been obtained, the cuspid teeth pass over each other without interference. (Slide 8.)

The arrangement of artificial teeth presents two phases, the esthetic and the mechanical. The esthetic side envolves the consideration of the patient's temperament and the selection of a tooth of proper form, shade and size. It also includes the arrangement of the anterior teeth in the most artistic manner. There are certain laws which nature seems to follow in the placement of the natural teeth which should be carefully considered by the dentist, namely:

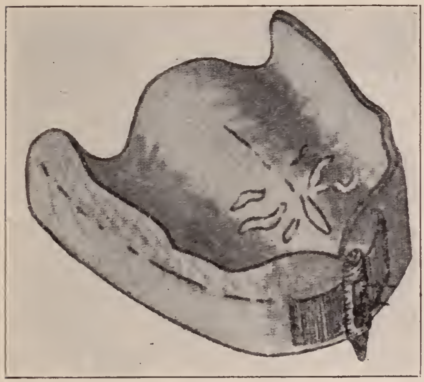

Fig. 4.

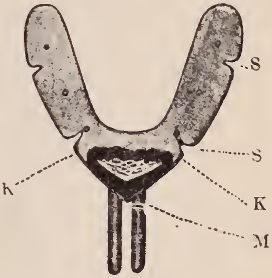

Fig. 5.

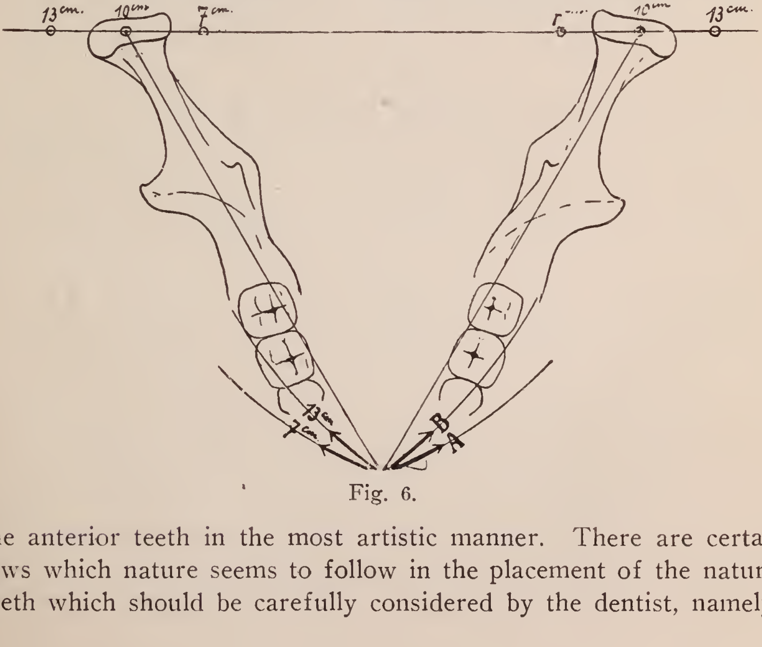

Fig. 6.

The upper central incisors are generally placed parallel to the median line while the lateral incisors are slightly inclined. The cuspids are prominent at their cervical margins so as to partly obscure the bicuspids from view. The lower incisors are all parallel to each other and to the median line while the lower cuspids are strongly inclined. The straight effect produced by the parallel arrangement of the lower incisors can be overcome by having one slightly overlap the other. This is also true of placing the upper lateral incisors, where a slight irregularity produces a more artistic effect.

The mechanical side of tooth arrangement is all important from the viewpoint of efficiency and is the more difficult to understand. That there is a positive relation existing between the movements of the mandible, the form and position of the teeth, is evident and must be understood to successfully arrange teeth anatomically. Dr. Bonwill early advised the use of large bicuspids and molars and suggested that the sulci of the posterior teeth be deepened, the buccal cusps of the lowers be shortened while the linguals were to be left prominent. In the uppers, he recommended the opposite preparation, the shortening of the lingual cusp and leaving the buccal cusps prominent. This preparation in the molars, particularly, assists in compensating for the overbite of the anterior teeth and the inclined movement of the mandible. At the present time this extensive grinding is not necessary as the molds of teeth obtained from the manufacturers have been greatly improved. A proper form of the first and second molars however, will greatly facilitate the mechanical work of arranging them. Dr. Gysi has simplified the selection of the molars by determining the laws governing the depth of the sulci and has given us a rule whereby we can calculate the depth of the sulci or their opening angles in any given case. (Slide 9.) The following chart illustrates this point and gives us the opening angles of the first and second molars where the condyle path has an inclination of 20 degrees, the incisors a slant of 60 degrees, and rota-

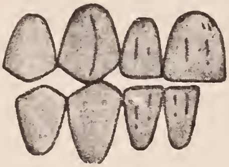

Fig. 7.

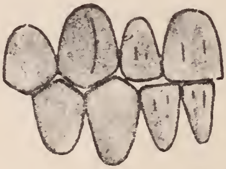

Fig. 8.

tion centers at 8 and 10 centimeters, respectively. Having determined the opening angles of the molars in a given case and possessing a fair knowledge as to the influence exerted over their position by the overbite of the anterior teeth and the slant of the condyle path, the actual technique of tooth arrangement is quite simple.

The upper ten anterior teeth are the first to be arranged. They are so placed that the incisal edges of the central incisors and of the

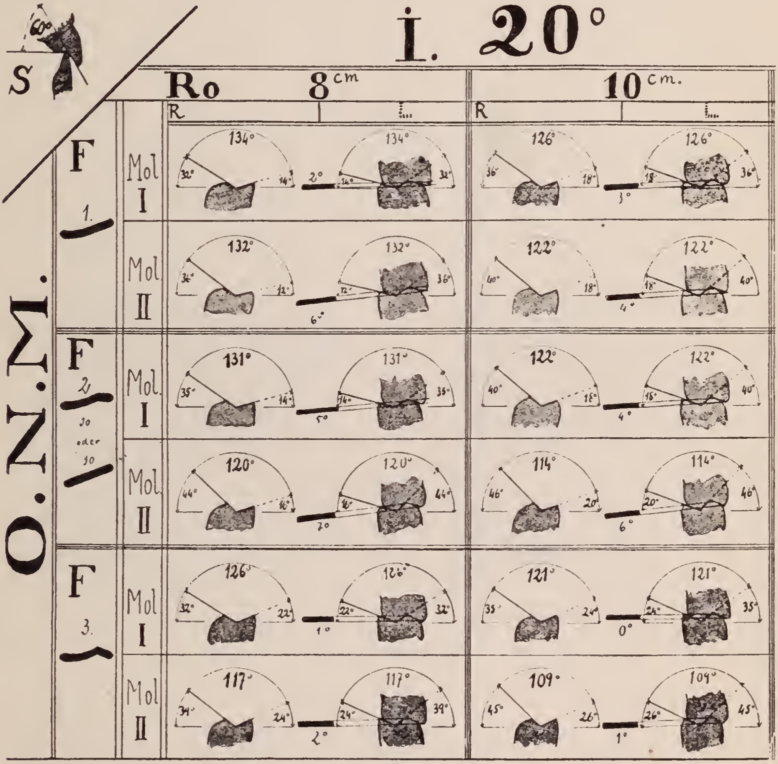

Fig. 9.

cuspids are in a straight line with the summit of the buccal cusps of the bicuspids. The incisors and the cuspids are slightly beveled on their lingual surface so that they will pass more readily over the lower anterior teeth without interference. The next teeth to be placed are the lower second bicuspids. They should occupy the interspaces between the upper bicuspids. The lower second bicuspids are followed by the lower first molars. The mesial cusps of which are placed on line with the distal-half of the lower second bicuspids. The distal cusps of the lower first molars are inclined upwards. During the placement of these teeth the lower model is moved from side to side to observe whether the proper articulation is being obtained. The lower first molars are followed by the upper first molars which in turn are followed by the lower second molars. The lower second molars, however, are placed with a more decided upward inclination than the lower first molars. The second molars by their lateral and antero-posterior inclination form the balancing points of both dentures when the mandible is protruded or moved from side to side. The upper second molars are the last to be placed and complete the arrangement of the posterior teeth.

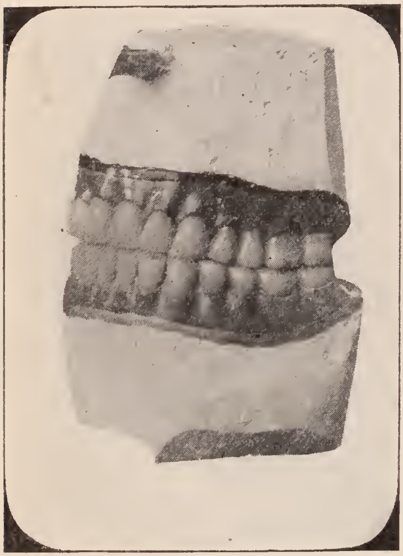

Fig. 11.

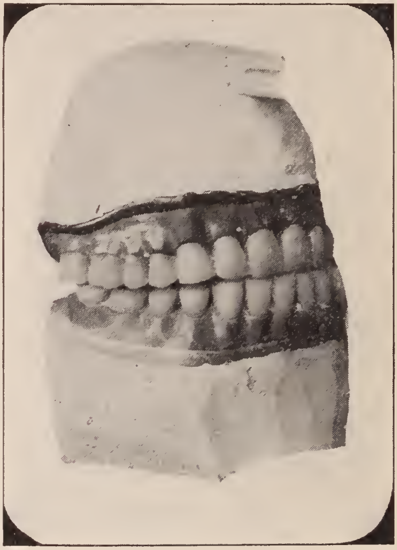

Fig. 12.

There are several advantages in arranging the lower posterior teeth previous to the anteriors. By placing them in the order described, little trouble is experienced in obtaining the proper articulation and we are always certain of getting correct interdigitation. The placing of the lower anterior teeth becomes a simple matter of filling in the space left between the lower second bicuspids. Trouble is sometimes experienced however, with cuspid interference.

This can be overcome by shortening the distance between the mesio labial angle and the summit of the lower cuspids and lengthening the distance from the mesio labial angle to the summit of the upper cuspids. This simple preparation of the incisal edges permits the upper cusps to pass between the interspace of the lower cuspid and first bicuspid. In placing the lower incisors it may be necessary to narrow them slightly.

Little overlap should be given the anterior teeth as a decided overbite would necessitate a greater inclination of the molars and a deepening of their sulci; this would increase the leverage formed by the interlocking of the cusps and would have a tendency to unseat the dentures during mastication.

Having completed the arrangement of the teeth, the case is now tested to observe whether proper articulation has been obtained. By articulation is meant, the contact existing between the upper and lower teeth when the mandible occupies any other location than the position of rest. When the mandible is in the latter position, teeth are said to be in occlusion. The lower model is protruded bringing the buccal and lingual cusps of the lower teeth in alignment with the corresponding cusps of the upper teeth and the anterior teeth in an end to end position.

In the lateral movements one condyle becomes a pivot or rotation center while the condyle on the opposite side moves forward in its path. During this movement the teeth on the pivotal side are in contact from the median line to the last molar. (Slide 11.) On the opposite side, we have contact of the teeth usually at but one point, this falling as a rule on the mesio-lingual cusp of the last upper molar with the disto-buccal cusp of the lower last molar. This latter point forms the balancing contact and prevents the dentures from tipping during mastication. (Slide 12.)

In closing, I wish to add that this paper being a part of a Symposium much of the detail must be left unexplained. It remains, however, that dentures occluded in the manner described will give patients increased efficiency in the power to masticate their food properly and bring greater satisfaction to the dentist.

ALCOHOL AS A SUBSTITUTE FOR COCAIN IN ANESTHETIZING THE PULP.*

BY E. BALLARD LODGE, D.D.S., CLEVELAND, OHIO.

On September 27, Mr. B., a man of 50 years of age, presented with acute pain in the right temple. Paroxysms were brought on by taking of warm drinks or anything warm into the mouth, and relief was temporarily secured by cold water. The patient had suffered a good deal for the preceding two weeks, but being in another part of the country he waited until returning to Cleveland before having his teeth attended to. When he called at my office I found that water at 110 degrees Fahr. would bring on paroxysms of a violent nature. The patient could not locate the offending tooth but he was satisfied that it was on the right side of the lower jaw.

Pulp disease was suspected and the usual method of locating the offending tooth was carried out. The rubber dam was adjusted for the purpose of isolating the suspected tooth and warm water was applied. By this method it became perfectly evident that the trouble was in the pulp of the lower right, second, bicuspid tooth. The tooth contained two gold inlays, one on the disto-occlusal surface and one on the buccal side. Both inlays were large. An opening was made through the buccal filling with a No. 1/2 S. S. White round bur for the purpose of gaining access to the pulp-chamber and for applying pressure anesthesia should occasion arise. The pulp-chamber was carefully entered. There was no hemorrhage owing to the degenerated state of the pulp, but sensation to the merest touch of the point of a smooth Donaldson's broach was very acute.

It seemed expedient to use cocain by a pressure instrument for the purpose of painlessly removing the pulp. After repeated trials the pain caused by the point of the broach was just as acute as before using the cocain. I then removed the inlay.

There was no question about the cocain solution entering the pulp chamber as the contact was perfect and the chamber already had been entered by the bur. After making as complete a failure as possible with efforts to anesthetize the pulp the patient was allowed to go home. There was some relief of mind to know that the pulp chamber was opened for the free exit of gases, only a tiny bit of cotton being placed loosely for the protection against the admission of foreign substances. The patient was asked to return on the 29th, two days later.

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*Read before the Cleveland Dental Society November 6th, 1911.

At this sitting he related that he had had a very bad night and that the paroxysms were very severe. The rubber was again adjusted and after the usual cleansing of the tooth with alcohol a test was made to see if the pulp was still in its sensitive state. This was done by means of the broach as before and was found to be in a hyperesthetic state. A second attempt was then made to anesthetize the pulp with cocain solution as on the preceding occasion using about a 3 per cent solution of cocain in distilled water and with the pressure instrument, with the repetition of the same miserable failure. The patient said he felt like getting drunk That suggested alcohol. People get drunk from alcohol. I loaded the syringe with alcohol, said to be 95% sol. (though probably somewhat less because of its affinity for water) introduced a drop or two and it worked like magic. The pulp was completely anesthetized in a moment and the Donaldson's smooth broach was passed painlessly to the end of the root, after which a barbed broach was inserted and the pulp was painlessly withdrawn. A dressing was placed and the patient excused. On October 9, eleven days afterward, the canal was filled, there having been no bad after effects in the way of soreness or other unfavorable symptom.

Nothing but a general anesthetic seemed indicated after the failure of the cocain, but the alcohol served the purpose. I was really led to resort to it, however, because while not usually regarded as an anesthetic we know it to be an antiseptic and in the drop or two necessary to infiltrate the pulp a non-toxic. Then too, remembering that in the year 1902 alcohol had been successfully used by Verge and Pitres in gramme doses, at 60° C. and hypodermically injected into the soft tissues for cases of severe neuralgia, I felt it worth a trial in the desperate case above cited.

The question now arises: How about its use as an obtundant of hypersensitive dentin? And if so used under high pressure will it not injure the pulp whose integrity we do not want to jeopardize?

I was willing to take a chance on the next case that presented. The case was that of a young lady of about 25 years of age, for whom I had retracted an upper left central incisor. This tooth had had pyorrhea which had yielded to treatment.

The tooth had also been protruded about a quarter of an inch, a pathological irregularity of Fletcher. The retaining appliance having been adjusted it was deemed necessary to shorten the tooth which had also become extruded about a sixteenth of an inch.

The dentin was very sensitive to the small carborundum stone and I decided it would be a good opportunity to resort to the alcohol. The pit was made in the incisal edge that it might be subsequently obliterated. Complete anesthesia of the dentin was produced in a moment and the operation of grinding the tooth was done in a very short time. The question arises: Was the pulp killed? In answer I will say that four days after this operation I made a test for the purpose of determining the condition of the pulp and found, greatly to my satisfaction, that it was normally sensitive.

There have been to date four cases of pulp extirpation and seven cases of sensitive dentin for which I have used the alcohol. In all of these cases, with one exception which, as yet, I have been unable to see, there have been no bad after effects, no hyperaemias, and the dentin has been normally sensitive to instrumentation done for the purpose of determining the condition.

In using alcohol for pulp anesthesia there are several questions which present themselves for solution.

First: Will alcohol injure the pulp which we wish to protect?

Second: If it will not do so in all cases will it in some?

Third: Will not a weaker solution than the 95% solution answer the same purpose and do so with greater safety to the pulp?

Fourth: Will alcohol at blood temperature be as efficient as at either above or below that temperature?

Fifth: What other effects should be looked for, if any, which should be guarded against?

There are still some other questions to demand our attention that I am as yet unable to answer, but I intend to investigate all of them and I shall be glad if others will use alcohol in the manner I have suggested and assist in the development of a useful method of practice.

I would further call attention that Cleveland was the city in which intra-dental anesthesia was discovered in the year 1903, and I take this occasion to say that we as dentists should feel very much honored to have among us a man who like many others in our profession, has had too little recognition to say nothing of pecuniary rewards for his splendid achievement for dentistry. I am speaking of the discoverer of high-pressure anesthesia, Dr. C. G. Myers.

THE INFLUENCE THAT DISEASED CONDITIONS OF THE MOUTH, NOSE AND THROAT HAVE UPON THE INDIVIDUAL WELFARE AND A CONSIDERATION OF THEIR RELATION TO THE COMMUNITY'S HEALTH.*

BY LOUIS OSTROM, M.D., ROCK ISLAND, ILL.

As civilized people we must pay the penalty of civilized, unnatural modes of living, such as stuffy, hot and dry, dusty living rooms, then directly going out into the cold, dusty, outdoors, continually changing many times a day, at the same time not dressing properly for the sudden changes of temperature and moisture. Our great, great forefathers, whose lives depended on whether they or the enemy were first killed, lived a natural life in caves, thatched huts, skin tents, or in the open, allowing them the benefit of fresh air and sunshine all the time. Their condition also compelled them to great physical effort to obtain their food, the result being a wonderfully developed body. They also must have had a lot of time for their meals, taken at such convenient times as food was obtained. Under such outdoor existence changes of temperature, clothing and food did not occur. They did not gather in large, hot stuffy halls, use common drinking cups, nor indulge in noxious drinks or food stuffs that today is so often the case.

The greatest factors of ill health, to my mind, are the large, stuffy, poorly ventilated halls and schools, in which are gathered people with all manner of mouth, nose and throat affections. The poorly selected and improperly cooked foods that directly or indirectly destroy the teeth, injure the nerves of taste, and injure the secreting organs of the mouth, thus interfering with digestion, and the lack of outdoor exercise or any exercise whatever, to promote physical resistance to deleterious influences, such as the various infectious or contagious conditions.

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*Read before the Rock Island County Dental Society at Moline, Oct. 10, 1911.

Careful examination of the prehistoric skulls in good state of preservation show a wonderfully good condition of the teeth and jaws. Ancient writings lack accounts of such diseases as pyorrhea or decayed conditions of the teeth. Study of the ancient drawings, carved or cut images, show an entire lack of the modern adenoid face or of the deformities of the face caused by irregular teeth. The present prevalence of mouth, nose and throat diseases must then depend on modern conditions.

The subject for our consideration is so vast and so important, that I felt it necessary to precede the discussion with the above short, general statements, in order to better understand present conditions.

In the Spring when everybody opens the windows and lives almost an outdoor life, nose and throat ailments disappear almost as by magic. This good condition continues until Fall, and on the arrival of the first cool days, which means closed windows and doors, the usual colds in the nose and throat begin.

We have all noted the wonderful good health of the ordinary, common street newsboy or ragamuffin in the larger cities, who has no home, no friends, and nothing but the outdoors to live in, although he is poorly dressed and not always well nourished, he is able to withstand exposure and catches colds less frequently than boys in our best homes, with the greatest luxuries surrounding them. This is so apparent in our schools, where old and obsolete heating plants still exist, and no effort is made to ventilate. A teacher or pupil who is not physically strong enough to resist infection at once becomes a victim. Here is the beginning of future tuberculosis, anemia and general poor health.

The utter neglect, we can almost say criminal neglect, by most communities, of their children and themselves, is something beyond my understanding. Even our tri-cities have their officer of the humane society, and society for prevention of cruelty to animals, so that when a good for nothing dog or cat or a sick cow, and I would say a sick mule too, but I never heard of a sick mule, is found, care is taken that it cannot spread the disease to other animals or people. In school, however, we, I say *we,* do not yet have inspection of the teeth and the various dangerous throat, mouth, nose and lung diseases that can be rocognized and care be taken that others do not become infected.

In discussing the diseases of the mouth, the teeth must of course be included. My remarks, however, will be limited to general conditions, not to any special diseases. Any person with a mouth full of decayed teeth is continually absorbing the poisonous product produced by decay. Not infrequently do we find an ulcerous condition of the tonsils, gums and teeth, due to bad teeth, which in turn entirely alters the chemical composition of the saliva, and thus interferes with salivary digestion. These toxic materials also interfere with the gastric and intestinal digestion, which is continually proven by the dental surgeon when he removes or properly fills the teeth, and at once, with no other treatment, innumerable ailments disappear.

A short time after the law prohibiting the common drinking cup went into effect I happened to be in the new city hall in Chicago. While admiring the architecture, I, for the first time, saw one of the bubbling drinking fountains. This was very interesting, because of the great number of people who were using it at that time, and the funny antics many went through before they caught on to just how to get a drink. In that group was a little newsboy with pus running out of his nose onto his lips, which he licked at intervals while waiting his turn. Just a short way ahead of him was a man with an ugly sore covering the middle of his lower lip. While looking at these two persons, thinking what a splendid chance both of them would have had to pass whatever infection was about their lips, to those who would have used a common drinking cup, a man standing by me made the remark, "I'd rather take my chances with a few germs than have to drink from that thing." This man represents the class of people who, by willful neglect, exposes everyone to infections from far worse cases than those above mentioned. The greatest step in preventing spread of disease so far has been the abolishing of the common drinking cup. There should be much less mouth, throat and general diseases in our cities, as a result of this good law.

The Hindoo also can teach us a valuable lesson about the care of our mouth. At the drinking places he never allows the cup to touch his lip, for fear that he will lose caste.

The germs that enter the mouth during inspiration and with the food, continually grow in number, and cause putrefaction and decay about the teeth, especially if they are decayed. The welfare of the individual is constantly menaced by such conditions, and they are so liable to throat and digestive disorders that it well behooves everyone of us to assist the people by instructing them in the proper cleansing and care of the mouth, particularly because such individuals, though not always attacked by infections or contagions themselves, nevertheless are a constant source of poisonous material which can cause dreadful suffering in a person not able to resist the invasion, and who may use drinking cups or other means of transmission after such germ-filled mouth has used the cup.

It may be well at this time to remind ourselves of an important physiological and anatomical fact about the nose and throat. Everyone knows that inflammatory or catarrhal troubles of the upper air passages are not confined to any circumscribed area, but show a peculiar descending character. A so-called cold (Rhinitis) passing from the nose to the pharynx, and under certain conditions, into the larynx, while a primary cold, so-called, in the larynx or lungs, seldom passes up into the pharynx or nose. The larynx shows a wonderful resistance to the advance of infections from adjoining tissues. This is not accidental, but depends on the generally accepted fact that progressive, diseased processes meet with a certain amount of resistance, whenever the character of the epithelium changes, and this resistance may be sufficient to arrest further advance. For this reason it is possible for an individual to have produced an immunity to certain diseases, though the mouth, nose and throat are reeking with disease germs, and thus be a fountain-head ready to throw out enough to infect anyone near him, especially in crowded and poorly ventilated halls and school rooms.

In the nose and naso-pharynx we have ciliated columnar epithelium, while in the oral pharynx is found squamous epithelium, and this extends to the upper border of the larynx, where it changes to ciliated columnar epithelium throughout the entire larynx, except a very small portion in the inter arytenoid notch;—that is, germs are mechanically removed from the pharynx by swallowing, by food, etc., while the cilia cause a current of mucous, which carries the offensive particles into the pharynx or elsewhere from the nose or larynx. It is well to remember these facts in treating affectionc of the mouth and throat.

The tonsils next to the teeth are a great source of trouble. As to the mooted question of function, nothing need be said, when it is so much more important to consider the many ailments they cause and how to prevent them.

To the average person the mention of the tonsil means sore throat, foul breath or obstructed respiration. As important as these troubles may be, they are very insignificant when compared with the systemic ills that have their origin in the tonsils.

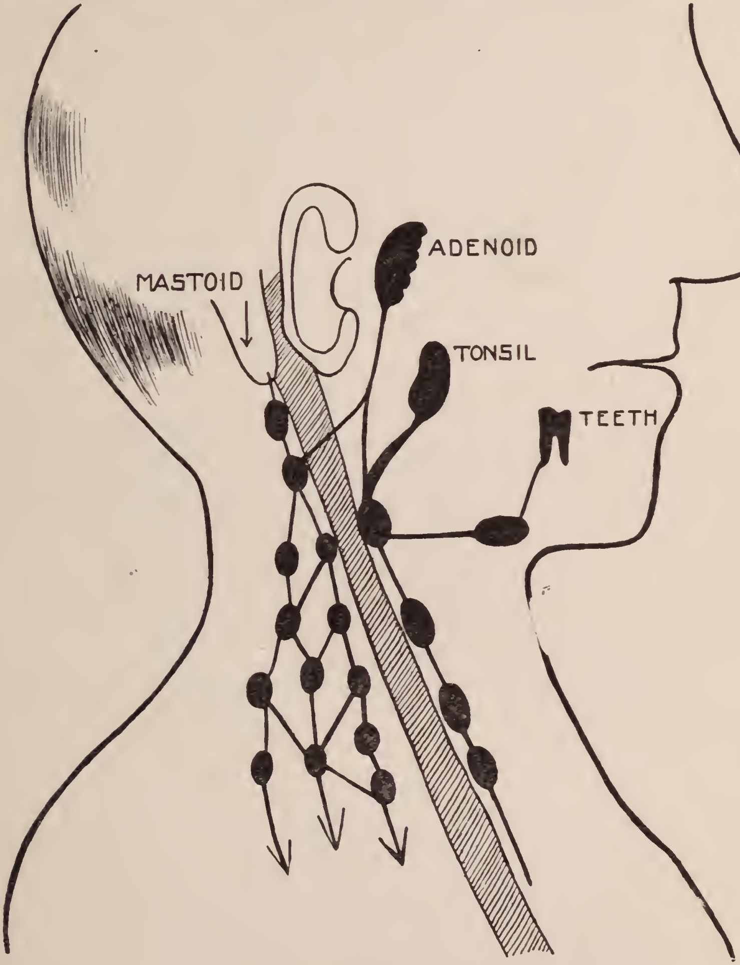


Fig. 1.
Lymphatic Glands Draining Teeth, Tonsil, Adenoid and Ear.

The frequent conditions of enlarged cervical glands, often called tuberculous glands, almost always have their origin in the tonsils, adenoids, or teeth. The lymphatic glands draining these organs are directly infected in most cases. This I think conclusive, because in ordinary consumption, these cervical glands are seldom enlarged, while in nearly every case of enlarged cervical glands, when the tonsils and adenoids are properly and completely removed, and the teeth filled, with no other treatment, in most cases, the swelled glands subside, to return no more. It is also known to us all that the longer the enlarged cervical glands are allowed to remain the more liable does the patient become to general infections, by reason of his lowered vitality.

I have copied a drawing after Eisendrath, Fig. 1, which will explain the cervical lymph chain very well. Dr. Ballenger (p. 363) sums up the tonsil discussion fully and to the point, as follows:

"1. Tuberculous tonsils have been found in subjects which died from tuberculosis.

"2 Some observers have failed to find the tuberculous process in tonsils and adenoids removed from living patients, while others have been able to demonstrate it. (In a series of 100 tonsils in my own studies, 8% were proven tuberculous.)

3. Primary tuberculosis of the tonsil, while not common, cannot be said to be rare.

4. Secondary tuberculosis of the tonsils has been demonstrated.

5. Latent tuberculosis may exist in tonsils and adenoids without presenting distinctive clinical signs.

6. Rheumatic fever, acute endocarditis, septic thrombophlebitis, pulmonary gangrene, and other infectious conditions have their initial lesions in the tonsils.

It is therefore well to note that a great number of diseases have their origin in the tonsils, without any particular local disturbance, and that these diseases can easily be spread to other persons by various means of infection or contagion.

Ballenger also quotes a prominent surgeon, who said that the tonsil is of greater clinical importance than the appendix; that it causes more suffering and more deaths. If this is true, and I believe it is, the tonsil is worthy of the most serious and painstaking study. The technic of its removal should receive the same careful and patient attention that has been devoted to the removal of the veriform appendix.

As of the tonsils, so also of the adenoids. The average person thinks only of the adenoid as something that stops up the nose. While this is generally true, it is also true that many adenoids do not stop up the nose, yet they produce other permanent injuries. We must remember that the nasal obstruction by adenoids is entirely relative. Fig. 2. A small adenoid in a contracted space may obstruct breathing, and produce more deafness than a many times larger adenoid in the large, wide open passage behind the palate. Just two weeks ago I removed the adenoids of two children, sisters, aged 5 and 7, where the adenoid mass was extremely small, but spread out over the entire upper portion of the pharynx, encroaching almost a half an inch on each side of the Vomer, thus producing much more obstruction than the average large adenoid. This relative condition must also be considered in the causation of irregularities of the teeth, where a small adenoid in a narrow post naso-pharyngeal space will produce early mouth breathing habits, which in turn permits of atrophy of the orbicularis oris which is seen in these mouth breathers, with their thin, expressionless lips. The pressure exerted by the external muscles of mastication press inward the upper teeth, so to say, squeeze the sides of the upper jaw together. This in turn raises up the hard palate, producing the high arch so frequently seen, and the protrusion of the upper teeth. Such expressionless faces can be seen in any collection of photographs. The early removal of adenoids can prevent all such deformities, and although some deformity will remain permanent after 5 or 7 years

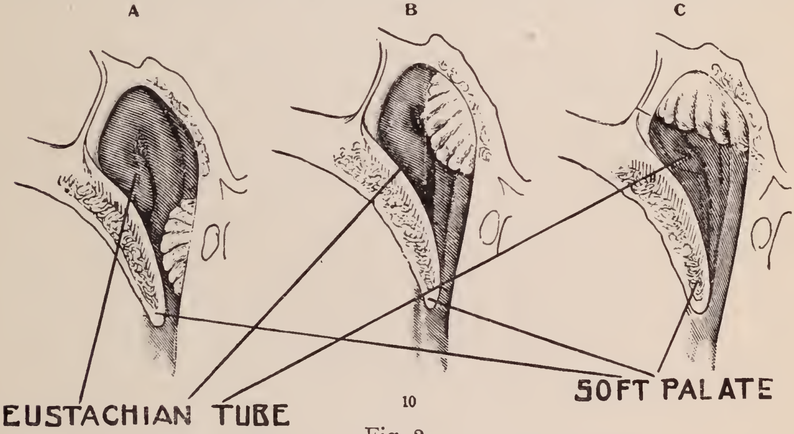


Fig. 2.
RELATIVE POSITION OF THE ADENOIDS.

of age, general health is permanently restored, and the facial deformity can very easily be corrected by the modern methods of dentistry. The results thus obtained are truly wonderful.

We will consider only the general diseased conditions of the nose and their effect on the individual. Any injury or disease which causes the nose to be obstructed may produce the same deleterious effect as large or obstructive adenoids. A deflected septum, enlarged turbinates, and modern crowded halls or poorly ventilated rooms will produce a long train of troubles, especially the liability to tuberculosis, which when it once has taken hold of such a person, and he in turn attends meetings and coughs or expectorates, is a menace to the general public. Later on the disease of the nose gradually passes into the air cells of the face, or sinuses, as they are called, and then, unless they are cured, a continual discharge of pus takes place, which in turn produces polypi, asthma, and numerous reflex disturbances, not infrequently even insanity, and conditions of a general poisoned system, besides the innumerable cases of neuralgia that have produced such a fertile field for quacks and patent medicines. So frequently do we read of someone poisoned by headache cures, that the public hardly takes notice of such news items.

Another fertile source of trouble in the nose is atrophic affections of the mucous membrane or occlusion by deviations or hypertrophy of the natural appertures of drainage or ventilation. The so-called non-suppurative sinusitis which causes the same subjective symptoms of headaches as does the pus case. One of the most common symptoms of this condition is a pocket full of glasses, none of which are of any help to his headache, and the most fertile field for the department store and jewelry store optician.

Lastly, and of very great importance, is the fact that epidemic cerebro spinal meningitis begins most frequently, if not entirely, in the nose and throat, particularly in the region of the adenoids.

Westenhoeffer claims that a large adenoid and lymphatic diathesis predisposes to acquiring cerebro spinal meningitis. The adenoid is, therefore, of the same importance in transmitting the germs of meningitis, as the tonsil is of the streptococcus; for instance, scarlet fever, which some claim always has its origin in the tonsils. It has repeatedly been proven that the germs of meningitis are often found in the naso-pharynx of healthy persons, who have come in contact with patients suffering from meningitis. Although such persons may not be ill, they nevertheless are very likely carriers, and can transmit the disease by coughing, spitting or sneezing, to those predisposed to meningitis, by the presence of adenoids and nasal disease. It has been fairly well proven that the germs travel into the maxillary and the sphenoid sinus and middle ear, thence through the cranium by means of the lymphatics. The ethmoidal cells, however, are not involved. The disease, therefore, does not become manifest until the germs pass into the skull, and under such conditions the patient may spread the disease broadcast, though he himself may suffer apparently from only a cold in the head.

It is because of such conditions and because we have had a lot of such meningitis cases around here in the last year or two, that I have tried to emphasize the importance of fresh air, sunshine, good food and exercise, and natural, common sense modes of life, and thus lessen the liability to systemic diseases, due to nose and throat infections, and by the same means, to protect the public from diseases thrown out of the mouth and nose in stuffy halls, schools and poorly ventilated homes, by caring for themselves, and taking such precautions as are necessary to avoid disease.

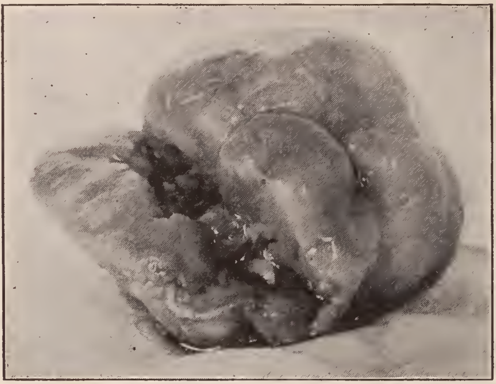
It is only by educating the general public in these matters, that dangerous epidemics of meningitis, diphtheria, scarlet fever, typhoid, etc. can entirely or to a great extent be abolished.

SARCOMA FROM AN ILL-FITTING DENTURE.

BY A. BROM ALLEN, D. D. S., CHICAGO, ILL.

The majority of dentists do not give sufficient attention to artificial dentures which have been in the mouth for years and have become ill-fitting and useless. This loose condition causes a growth which may develop into a sarcoma or carcinoma by the constant irritation as is shown in the cut.

This is the actual size of the growth removed last September from the superior left side of the mouth of Miss W. It had remained in the mouth ten years and at the points of attachment the alveolar process was absorbed so that there was quite a depression at those places. After the removal there was profuse bleeding so that the tissue had to be clamped with an artery forceps and held for half an hour, when the hemorrhage ceased. Feeling that the growth might be malignant, a section of the tissue was microscopically examined and found to be a sarcoma. So this growth may return at any time.



SARCOMA FROM ILL-FITTING DENTURE.

PROCEEDINGS OF SOCIETIES.

ODONTOLOGICAL SOCIETY OF CHICAGO.

The first regular meeting of the Chicago Odontological Society was held on Tuesday evening, October 10, 1911, at 8:15, at the office of Dr. L. L. Davis, 81 E. Madison street.

The president, Dr. C. N. Johnson, occupied the chair.

Dr. E. H. Baker, Chicago, presented a paper entitled: "Oral Conditions as Affected by Modern Civilization."

DISCUSSION.

DR. J. E. HINKINS:

Dr. Baker in his paper has covered so much ground, that I do not feel competent to discuss all of the phases of his paper, and I can only touch on one or two points.

As there are no statistics to prove that the teeth a hundred years ago were better than they are today, it would be useless for me or anyone else to say that the teeth of people are better today or are worse without some data to substantiate such a statement.

First, taking into consideration the conditions of the food stuffs a hundred years ago, I should say that the teeth of the people were better than they are now. More exertion was required on the part of the teeth for proper mastication of the food in those days than now, thus creating a better circulation in the gums. Again, on account of the method of preparation of the food at that time, people received more phosphates, hence there were better teeth and better bones. When we consider the physical conditions of today, the over-heated houses, over-heated apartments, and the methods by which flour and cereals are prepared, extracting most of the phosphates, and when we consider also the addition of cold storage products, we can realize that they produce a chemical action which is detrimental to the proper assimilation of the food stuffs. On account of these conditions, I am led to believe that the teeth of the people of today are not of such good quality as were the teeth of the people of former generations. Many cases have come under my observation where patients have come with their constitutions greatly impaired, yet by the application of bridges and artificial teeth the results have been wonderful in improving the health of these patients. In many instances I have had patients whose general health was greatly impaired and who would lose their teeth in spite of everything I did for them either on account of decay or from pyorrhea. In many instances there has been an acid mucus secretion eliminated from the membranes of the mouth and salivary ducts, which acted almost as a solvent of the teeth.

Dr. Truman W. Brophy:

Mr. President, I think that a paper of this character should be carefully studied before any effort is made to discuss it. It is easy to see the trend of the essayist's mind in working out the problems he has before him. He is endeavoring, no doubt, to draw a comparison between the conditions of our ancestors and present conditions.

I do not think that there is any difference in the condition of the teeth today and the condition fifty or seventy-five years ago. except that if anything, they are improved. The children's teeth are better cared for today because people realize that destruction once begun, goes on to a finish. I think if we look around us, we will conclude that the condition of the teeth is better today than it was as afar back as we can remember. We find men 75 years old with good natural teeth, whereas, when I was a boy 10 or 15 years old nearly all the men of that age were toothless. We all know that people oftentimes neglect the teeth, that part of the body requiring more care than any other. General observation, I think, will satisfy anyone that the teeth of today are better than they were fifty or seventy-five years.

In regard to the second question, as to pyorrhea, the loss of the teeth from so-called pyorrhea occurs more generally in middle than in advanced life. We believe, if those who have careous teeth are able to have the cavities of decay so treated as to prevent their destruction, they may retain the teeth until they reach an advanced age. Of course, we realize that many people between the ages of 20 and 30 are subject to this condition.

On the whole, I would say that the teeth are under better control, and hygienic measures are more comprehensive. I do not think there is any difference in regard to the existence of pyorrhea. It is possible that the peasants who live on hard food and use their teeth in masticating it have stronger teeth. There is a stimulus that comes from use.

As to the examination of school children, I don't think there is any difference. If three children are born in Germany, and then three more of the same family born here under the same conditions, I don't think there would be any difference. In Germany 96½% of the children had diseased teeth. In our own country we find on examination about the same condition.

I am very glad that Dr. Baker has been able to come to us and read this paper, as it will furnish us with an opportunity to become more interested in the scientific aspect of this question.

Dr. C. S. Case:

Mr. President, the paper is a very interesting and instructive one, but it is so far-reaching in its proposition it is almost impossible for any person to discuss it without giving it a great deal of thought and careful consideration. It seems to me that the essayist places too much stress upon the influences of environment. One would get the idea that the developmental processes of organic evolution were almost entirely due to the influences of environment. Heredity plays such an important part in biological development that everything in life would exactly duplicate itself were it not for the law of *natural variation.*

While environment has been an indispensable factor in organic evolution, as air is to life, the principal if not the only office it has performed during the past ages toward progressive development is in permitting the forms of life which are already produced by these laws to live and reproduce themselves. This is known as the law of natural selection, or as Huxley has aptly put it, "the survival of the fittest."

Furthermore, environal variations in individuals after birth are not transmissable except when its influence is exerted through many generations with the productions of a fixed variation. Nor is its influence believed to be ever sufficient to materially change the inherent size or form of the framework or skeletons of individuals, except through retrogressive action from diseased conditions. The instance which the essayist has cited of the remarkable changes in the cephalic measurements of the skulls of foreign-born children after being brought to this country is an evidence to my mind of imperfect or inadequate scientific data.

I do not believe that the teeth decay very much more today than they did fifty years ago. Of course, going back further, there must have been some time when the teeth did not decay, and there must have been a gradual change, but when we talk about fifty years, why, that was only yesterday, and I do not believe that great changes take place in that time.

Dr. P. J. Kester:

Mr. President, the study of mankind is extremely interesting to me. To get down to the more recent suggestions of the paper, I am inclined to agree with Dr. Brophy and Dr. Case that within the past forty or fifty years there has not been time for any changes other than accidental. During the World's Fair, I spent several days in the Anthropological building studying the skulls that were there. My idea was to determine whether the dental diseases of today were prevalent at the time that those skulls bore life. My remembrance is that I could find evidence of almost everyone of the diseases that exist at this time. I think that the care of the teeth has prolonged the life of the teeth perhaps 100%. Fifty years ago nearly all old persons had either no teeth or store teeth, but that is not the case at the present time.

Dr. E. R. Carpenter:

Mr. President, I feel that we are exceedingly fortunate in having presented to us a new viewpoint. We are very much indebted to Dr. Baker.

Climatic and food environment have a great influence on the teeth, no doubt. If you will observe the young women, German, Swedish and Irish who come to this country as domestics having lived a very quiet life and eaten plain food, you will find that in a few years after coming here, their dental tissue which was perfect, has become absolutely riddled with caries. They are allowed prepared foods and sugar to the limit, and in a few years most of their teeth are decayed. The Swedes, Norwegians and Danes live largely on a fish diet, while the Germans have meat, and the same might be said of the Irish.

I do not believe that it is true that there is no more pyorrhea than there was fifty years ago. We do not realize the ravages of pyorrhea as they did fifty or one hundred years ago, because they are today constantly and intelligently fighting it.

Dr. L. L. Davis:

Mr. President, there was one thing in the discussion of the paper that surprised me, coming from the men older in the profession. I was born in England, and from what little observation I have been able to make during the past forty years, I would say emphatically that environment has a great deal to do with the condition of the teeth. I think you will find that in the larger cities of the United States and Europe caries is more prevalent than it is in the country. Environment, climatic changes and food have a great deal to do with the teeth, even to changing the shape of the skull. I have in mind an Englishman who came to this country in 1832, and when he was 78 years old he did not look any older than I do. He had every teeth in his mouth. I think you will find very few Americans who live to that age without any trouble with their teeth. Two of my relatives who lived in this country died without having to get a tooth filled. I can see how it is possible to have an immense amount of decay, but among those who live the plain life there is a different condition of the tissue. They have to use their muscles and teeth sometimes pretty hard on the food they get.

I think that a period of fifty or sixty years might make an immense amount of change. I think I have as good teeth as anyone in this room, but my three children have poor teeth. They must have food that I could not have in Europe.

As to the prevalence of pyorrhea, I said fifteen years ago that I thought pyorrhea was on the increase. It may be that my practice has drifted more to that line of work. I see it more now among the young people. I think it is on the increase, and is due to environment. My observation is that caries, while taken care of a great deal better, yet is more prevalent among young children than it was fifty years ago.

Dr. Baker:

Can you tell from the skull whether there was pyorrhea, doctor?

Dr. Davis:

I think that is quite possible. I showed some skulls of some mound builders taken up several years ago, and these showed pyorrhea deposits on the teeth.

Dr. E. A. Royce:

Mr. President, there is one thought that has come to me, and that is most of us who have been watching pyorrhea, decay of the teeth, and so on, have changed our location and our methods. We find pyorrhea where we did not find it years ago, and so I do not see how we can say whether pyorrhea or decay is increasing, because of these changes. My own impression has been that environment has a great deal to do with humanity in every way. It seems to me that the examinations of the teeth in the different countries hardly tell us of the influence of that environment. Later, when we have the teeth of the country children examined and the records of the city and country compared we may be able to arrive at a more accurate conclusion.. I doubt the memory of any person as to whether caries or pyorrhea is increasing because of the conditions I have referred to.

Dr. J. H. Woolley:

Mr. President, this address has certainly awakened in me a desire to know more about the subject in hand. It seems to me that in order to advance, the true data that will affect our future knowledge must be gathered now, in the manner in which the essayist is doing it. We have not the real scientific data to show whether pyorrhea is more prevalent now than it was fifty years ago, but my impression is that the decay that occurred in those days was fully equal to that which is seen today. Pyorrhea was not specially noticed, but if we commence gathering statistics now we will probably in twenty-five or fifty years have something definite to work on. I would like to commend Dr. Baker's work, and I am reminded of the necessity of an endowment fund to help out this research work.

Dr. G. W. Cook:

Mr. President, we ought to give more study to these questions that Dr. Baker has brought to us. The discussion of the subject shows that we have nothing but memory to go by. We have no true knowledge as to whether we have been lessening disease. It is true we are paying more attention to it, and we sometimes think that diseases of the teeth and alveolar processes are more prevalent because we are doing more work and observing things more closely.

There is one thing the doctor brought out that struck me as very wonderful, and that is the toxic conditions that may influence all these diseases. Now we say that disease is more prevalent. I think that the general infectious diseases have increased, not because we know more about them, but because there are more cases than ever before. I might say in this connection to the doctor that there have been two schools in regard to pyorrhea. One teaches that it is of local origin while the other declares that it is of systemic origin, and to gather data on that subject is a task of great difficulty on that account. Perhaps the best data we have is from the gentlemen who have collected a number of cases. Environment and fatigue, I may say, undoubtedly have a wonderful bearing on all diseases. Fatigue begets a disposition to a disease. It is illustrated in some observations Cope made many years ago on the infection of the two species of rats by anthrax. The white rat, I think it was, was immune to the infection of the bacillus, while infection followed in the other.

In the case of pyorrhea, I think if an investigation were to be carried on we would find that it is on the increase in the cities, while in the country you would not find so much pyorrhea. Environment does play an important role in the deductions of its causations. A systematic way of determining these conditions such as adopted by the essayist, should be carried on by all of us.

I am extremely interested in the paper because it teaches how important it is to make clean-cut observations, and collect data. My practice has been largely among native Americans, but from the clinical observations I have made I have come to the conclusion that foreign born people in the city are more liable to have our dental diseases than our own people. In the dispensary I have noticed that people suffer a great deal from caries of the teeth early in life, and pyorrhea later on in life. I would suggest that each of us make complete data during the next year so that we can report a year from now what our observations have been.

Dr. J. G. Reid:

Mr. President, I will say a word in corroboration of what one of the speakers has said in the discussion, and which has been my own observation, that environment is a very important consideration so far as diseases of the oral cavity are concerned. That is especially true in the comparison between city and rural life. I have a little pyorrhea in my own mouth, and I think it is due to the noise. I have lost two teeth from it in the last three years. I lead a very quiet life, and yet the city noises are very trying to me. I have observed what Dr. Carpenter referred to, and it is almost impossible for the skillful dentist to resist diseases that prey on these people. I think our foods exert a great deal of influence. I do not know that pyorrhea has increased in the last fifty or seventy-five years, but we see more of it because we have more people to deal with, and we meet more people of different nationalities. I believe through the habits of the individual, the life he leads and the conditions that surround him, that it is on the increase.

In closing the discussion Dr. Baker said:

I feel very grateful to you gentlemen for entertaining me There is just one thing I wanted to ask, and that is whether there is any definite standard by which you could collect statistics as to whether pyorrhea or caries is more frequently met with in the city than in the country?

Dr. Reid:

Unquestionably, from the sources of information we are getting now, probably within two or three years we will have some statistics in regard to that matter in the rural districts if the examination of those children prevails as extensively as it has, and undoubtedly it will. We are more confined to the decay of teeth.

AMERICAN DENTAL SOCIETY OF EUROPE. MEETING OF 1911.

DISCUSSION OF THE PAPER BY DR. HIRSCHFELD ON "THE PERMANENT RESTORATION OF PIERCED CAVITY FLOORS."

Dr. W. A. Spring (Dresden) said the paper, presented with such conscientious accuracy to detail, left very little to be said in way of discussion. Unfortunately he, himself, had had no opportunity of trying the method put forward since the essayist had kindly sent him one of the rods, but the method appealed to him. It was well known that porcelain was kindly tolerated by the tissues. The only criticism he could offer from his own point of view was that the essayist assumed that in attempting the use of leadfoil ragged edges were left, but he had had very good results, not with leadfoil but with lead plate, and had found that if a cavity had to be enlarged in order to remove the objectionable rough and ragged edges, a piece of lead plate thick enough to be resistent was a very easy method to use, and it could always be placed so that it would stay. The method put forward by the essayist, however, seemed a very good one and was worthy of being tried by everybody.

Dr. W. F. Kelsey (Marseilles) said the essayist had brought forward one of the most interesting problems the dentist had to deal with, though perhaps there was one still more difficult, namely, that where the decay went down into the root. With regard to the question of time, he had a friend who was at the New York Dental College forty years ago, who had shown him a bicuspid which was perforated in the manner described and the orifice stopped with oxychloride of zinc. That tooth was retained today, and his friend maintained it was the best and only substance that would act without causing perforation. With reference to the question of perforation at the side of the root, he remembered a gentleman coming into his office with a lower third molar stopped with gutta percha. The patient stated that he had had the tooth treated by several dentists in the course of his travels through the world. When he saw the patient he removed the gutta percha and passed the probe to a depth of about one quarter of an inch and found black blood oozing. He told him he thought something had perforated the root and advised extraction. On the removal of the tooth it was discovered that it had been perforated and there was evidence of necrosis. He did not see the gentleman again for about a year, when he called again to see him professionally and mentioned that he had had a very bad time after the operation and admitted that he (Dr. Kelsey) had given him excellent advice, but said it was discovered there was already the commencement of septicaemia and necrosis, and his jaw had had to be operated upon. In addition he had suffered from a long series of diseases such as albuminuria and typhiod. The question of perforation was a subject that might thoroughly be discussed, and he should like to know what others would do under the circumstances of a recent perforation, not necessarily an old perforation, as under those circumstances no doubt the tooth would be extracted.

Dr. N. S. Jenkins (Paris) suggested that sometimes perforation occurred to so great an extent that the making of a round hole was impractical, and then the system of filling with porcelain could be adopted by making an irregularly shaped cavity, taking an impression, and making a regular inlay. There was nothing so well tolerated by an irritated gum as porcelain. Such a cavity, either for the purpose of taking an impression or for fitting a round porcelain inlay, he should hardly think needed to be treated with aromatic hydrochloric acid for any length of time. By touching the irritated gum with trichloracetic acid and then immediately exerting pressure upon it with cotton wool it was possible in the course of five or six minutes to get all the room needed without any bleeding and that might facilitate operation.

The President said the essayist had mentioned the porcelain root of Dr. Rhein, and it might interesting to mention that the day before he left Frankfurt he had the pleasure of seeing one of Dr. Rhein's porcelain roots that had been in the mouth a number of years. While he could not say that the tissues were perfect around it, the tooth was giving good service and on the whole seemed very well indeed.

Dr. Hirschfeld, in reply, said that, with regard to porcelain roots, he had had a fortnight previously, in his own practice, for the first time occasion to use one for his wife, and he should be glad if any member would notice the magnificent condition of the gums after the work had been done. Dr. Spring's idea of lead plate appealed to him very much and seemed to him very reasonable. But Dr. Spring would certainly admit that porcelain was preferable to any other method, and he hoped Dr. Spring would try the porcelain method instead of the lead. With reference to Dr. Kelsey's remarks, he had hesitated for a time as to whether he should not call his paper "A new system of curing pierced teeth," but that would have involved the idea that material could be used at the end of the root, and he was sorry to say he had not found the slightest possibility of using porcelain at the end of a root, though no doubt someone some day would discover the possibility, and in that case he should have been well repaid for the reading of his paper.

Dr. W. J. Younger suggested that instead of a porcelain root a natural root would be tolerated better by the tissues. With a natural root there was true adhesion between the root and the socket and the whole thing was self-supporting. With a porcelain root, however, there was no support from the adhesion between the root and the edges. He suggested that a natural root should always be used.

The President pointed out that the question of a porcelain root simply came forward in the discussion on the question of toleration by the tissues.

SOME NEW DISCOVERIES WITH REGARD TO THE WORK OF FONZI.

Dr. Kirk said he had been asked by Dr. Guerini to introduce a subject which Dr. Guerini wished to bring before the meeting. Every dentist was interested in the question of the discovery and manufacture of artificial teeth, and it was well known that three men stood prominently out in connection with that discovery—Dubois, DuChement and Fonzi, an Italian. The history of the discovery of porcelain was an extremely interesting one from the fact that it had been very difficult to get at the true inwardness of the matter. It seemed that DuChement claimed the priority of discovery and had given an account of his work, but there had been trouble with others who were also claimants for priority. DuChement was an emigre in England about the latter part of the 18th century and practiced in London, and the records left by him showed that, judged from modern standpoints, he was almost a charlatan. an advertiser of the first water. In his first publication he gave a series of letters written by eminent men, describing the value of the great discovery he had made, and amongst the names given was that of Sir Edward Jenner, who was one of the contributors to the fame of DuChement. Evidently a wordy warfare arose around the question of priority. By a careful search, some later investigators had been able to gather together the records of that controversy. Learned bodies in France at that time—amongst others the Athenaeum of Arts, considered the matter, and they awarded to the Italian Fonzi the right of prior discovery. Very little had been known about Fonzi, and indeed very little had been known of Italian dentists until their distinguished colleague Guerini took up the matter. Fonzi was a very important man, a dentist to various Courts of Europe, and a great man as a teacher and as an artist, and also as a poet. By a curious accident, some months ago an Italian physician practicing in the Italian quarter of Philadelphia, came into his office and handed him a picture and asked whether he knew anything about the man whom the picture represented. It was a lithographic picture of Fonzi. The physician said Fonzi was a relative of his. He (Dr. Kirk) accepted the clue and followed it up, and he found that the Fonzi family was still living in the Province of Chiatti in Italy. He gathered all the information he could and sent the record to Dr. Guerini, and told him to hunt the thing to a finish, knowing that he would produce results. Dr. Guerini was now prepared to show some interesting documents in connection with the discovery of porcelain teeth, and also some of the teeth themselves, which were made by Fonzi in the latter part of the 18th century and the beginning of the 19th century.

Dr. Guerini (Naples) said he was very anxious to find out something about Fonzi, and was happy on receiving the letter from Dr. Kirk giving him a clue. By patient work he had at last found the family. By dint of much journeying he reached the little town of Orsogna, and was surprised to find many portraits of Fonzi in existence. Also he discovered two sacks of molar teeth constructed by Fonzi; and amongst them many specimens that compared well with modern teeth such as those made by Ash. Amongst the teeth made by Fonzi were many natural forms not in existence today; for example, long lower teeth with the tatar imitated, and imitation of bad teeth. The patient was evidently afraid that if the tartar were removed the tooth would disappear also. Fonzi was the leading dentist of his time in all European nations, being dentist to the Emperor of Russia, the King of France, and to the Courts of several other nations. Very often he made teeth expressly for the patient. A king or a queen might have a certain kind of teeth, and in making artificial teeth for them Fonzi would accurately reproduce the lost tooth in porcelain, reproducing the shape, color, and tartar exactly to match the teeth that remained. There were even teeth made by him with black tartar in the interstitial surfaces.

Dr. Guerini showed a miniature painting and other portraits of Fonzi, and several original documents relating to his work. He mentioned that Fonzi was in Paris at the end of the 18th century, and was regarded as a highly educated man in science, especially in chemistry and physics, and in literature. He was also a poet, having written eight or ten poetic dramas. One of the documents produced by Dr. Guerini was a testimonial awarded to Fonzi by the Athenaem of Arts in Paris, which body also awarded him a crown and medal in honor of his invention. He also showed an original document conferring honors upon Fonzi, dated 1807, before which date Fonzi had completed his invention, which occupied many years in perfecting. He had also obtained from Fonzi's family a multiple bisturi.

DR. GUERINI exhibited many specimens of teeth, and said he felt honored at having established the fact that Fonzi was the real inventor of artificial teeth, that he was in fact the first and true inventor, and every modern dental factory had adopted Fonzi's system with a slight modification, not in the forms but in the pins for the vulcanite, etc.

THE PRESIDENT said the society owed a debt of gratitude to Dr. Guerini and to Dr. Kirk for bringing the matter forward, and it was a great honor to the society to have it brought forward before them first.

CHICAGO DENTAL SOCIETY.

A regular meeting of the Chicago Dental Society was held in the Northwestern University building, Chicago, on Thursday, October 17, 1911, at 7:45 p. m.

The president of the society, Dr. G. Walter Dittmar, occupied the chair.

Dr. N. Etchepareborda, of Buenos Aires, South America, was introduced to the society by Dr. C. N. Johnson, and made the following remarks in acknowledgment:

Mr. President, Ladies and Gentlemen:

Unhappily I shall not be able to express myself as intensely as I feel. I am deeply impressed with your warm reception, and to enhance my emotion and gratitiude, I have been introduced to this society, which so spontaneously honors me, by one of the most prominent men in the dental world, by one of the most eloquent men that I have ever heard, as he has the power of giving expression to all things, and to charm his auditors although treating the most dry subjects.

I am quite acquainted with the work of the Chicago Dental Society. I have followed its development as it is so closely connected with the progress of Dental Science.

No person will wonder at its progress, knowing that in the list of its membership are registered the names of Dr. Black, Dr. Brophy, Dr. Johnson, Dr. Taggart, Dr. Case, Dr. Grisamore, Dr. Sellery, Dr. Dittmar, Dr. Goslee, Dr. Prothero, Dr. Buckley, Dr. Logan, Dr. Fernandez and many more; in a word, the most illustrious names in the realm of dentistry, names that represent renown, science and fame.

I cannot prevent myself from making a special remark about the great old man, full of abnegation, has devoted his whole life to the progress of our science, imposing to everybody, in all the world, sympathy, admiration and respect,—I do not need to name him.

Let me profit by this occasion to say that Chicago is the most hospitable city that I have ever seen, and I assure you that I have seen a great many. I came here absolutely unknown, and I have been received, as people did in the biblical times.

As all the sciences, dentistry is in constant evolution and progress, there is not the last page in the book of any science, so I foresee that the Chicago Dental Society will fill many brilliant pages in the history of dentistry.

Gentlemen, many thanks for your cordial reception. I extend my best wishes for the success of Chicago Dental Society. Thank you, Dr. Johnson, for your kind words which are far beyond my merits.

A Symposium on Prosthetic Dentistry was presented, consisting of the following papers:

A paper entitled "Taking the Impression," by Dr. Carl Klein; "Taking the Bite," by Dr. J. A. Dinwiddie, Lowell, Ind., and "Occlusion," by Dr. J. E. Schaefer.

DISCUSSION OF SYMPOSIUM.

Dr. F. E. Roach:

Mr. President, it is impossible to discuss these papers as they should be discussed. I want to first tell you a little experience that I have had that almost floored me. Since I was asked to open this discussion I thought I would make some investigation with reference to the extent to which the profession has adopted the newer methods in prosthetic dentistry. I visited several laboratories in the city in order to get some data with reference to the taking of the bite. It was appalling to me to note the situation as I found it. I asked those gentlemen in the laboratories a few questions. The first question was this: What per cent of the profession sends their full dentures to the laboratory? That is a question quite impossible to answer, but the concensus of opinion was about 33 1-3%. I believe there are more than that. The next question was: What per cent of these cases was accompanied by mush bites, and to my surprise the almost unanimous answer was that 90% of the cases were accompanied with mush bites. The next question was: Have you any preference of bites, and why? The answer was unanimous that they preferred the modern methods with the trial plates, following the accepted methods of the teachers throughout the country. The next question was: "Do you find that the graduates of recent years use mush bites? They say they are about as bad as the old fellows. The next question: "What per cent of cases are returned for trying in the month? Practically none of the cases that came from out of town were returned, but the city men return them for trial. Then I asked: Do you object to returning for trial? They all answered the question by saying they preferred it and requested it. The next question: "Do you find any disposition on the part of the profession to shade the teeth?" They answered almost unanimously that there was no attention paid to this part of the subject.

I ascertained this data to satisfy my own mind as to what benefit is being gained by the work that has been done along these lines. I went to the laboratories for the reason that they have become the recognized institution for the dentists to do his plate work. Unfortunately the dentists have thrown too much work on the laboratory. I believe they are necessary, and have come to stay, and with rightful use they may be of great benefit to all of us not in a position to have a laboratory assistant, and consequently are compelled to send our dirty work, so-called, to the laboratory.

Now, to discuss the papers would take more time than allotted to me, but there are a few points I want to mention. In the first paper with reference to taking the bite, mention was made of the placing of wax around the impression tray for the purpose of confining the plaster and securing a more perfect adaptation of the material to the surface of the mouth, but there was not the emphasis placed upon the wax on the impression tray, as to its real value. In every impression I take, there is a roll of wax placed at the distal surface of the plate. This is done to confine the plaster and prevent the excess passing over the distal surface of the tray and nauseating the patient; the excess falling down from the margin makes a very unsatisfactory impression. It may have the appearance of being a good impression, but unless your material is carried up firmly you will not have an accurate impression. With reference to the care of impression trays, I find that it is a common practice to mutilate or scarify them. There is no necessity for this, and after you have once done it it is impossible to keep them clean. I advocate using vaseline on the tray to prevent material sticking to it. I find one of the greatest difficulties is in keeping the shellac and varnishes in condition for use. I take a ground glass stoppered bottle and cover it with vaseline, which aids in hermetically sealing the joint. This prevents evaporation. The same method applies to keeping chloro percha.

Everyone recognizes that taking the bite is one of the most difficult things we undertake in dentistry. I do not see how anyone can expect to get a correct bite by the mush bite process. When the steps are followed as outlined by the essayist by means of the trial plate it is a very simple matter, and it is a sure method of getting the proper relations of the upper to the lower jaw. The avoidance of the protrusion, or the lateral position of the jaw in closing is easily overcome. The suggestion of the essayist is new—the placing by the patient of his tongue at the heel of the plate, and it is possibly a very good idea, but I have adopted the method I believe originated by Dr. Prothero, and that is taking the jaw between your forefinger and thumb and doing the biting for them. Just ask the patient to loan you his jaw for a minute. When you get the jaw relaxed you will almost invariably get the correct bite.

In the construction of an upper and lower denture there are four steps that are important, the impression, the bite, the occlusion, and I would add, the cosmetic requirements, which I think was not emphasized enough in the paper. The denture must meet two requirements: first utility and then beauty. It must fit securely, and be arranged according to the temperament of the patient. In this respect I think there is nothing we can do that will be more effective in taking away the false appearance of a set of teeth more than shading them. If you do not select teeth from a number of shades it is a very simple matter to tint the teeth, in that way taking away the stereotyped appearance. This is so easy a matter that I do not believe we are justified in overlooking it.

Referring again to the taking of the bite, I feel that it is necessary to call your attention to one appliance that I believe is absolutely necessary; that is, the use of some means for measuring the distance from the incisors to the condyle. It is a very simple thing to demonstrate that unless you do place your models at the proper distance from the hinge of the articulator they will not occlude properly. This is especially true if we attempt to follow out the anatomical arrangement of the teeth with reference to the compensating curve, incline of the condyle, and so forth It has occurred to me that the profession has not taken to this matter of constructing dentures for the reason that it is made to appear so difficult. When once understood you will find that it simplifies your work, and the results will be far beyond your expectations. If you don't follow the practice of determining the inclination of the condyle it is at any rate necessary to use the face bow and place the models in their proper position on the articulator.

Dr. L. L. Davis:

Mr. President, there is just one idea that has come to my mind, and that is that no matter how thoroughly you have tried to get the proper impression, proper pitch and proper regulation of the teeth, if your teeth are not completed exactly in the same relation that you have your wax form the work is good for nothing, and the trouble with the laboratories is that there is not a laboratory in Chicago that will pack a set of teeth just the same as the set of teeth you sent them. I am obliged to make vulcanite teeth today because no one else will follow my ideas. I cannot get along without the spring plate you see on the market occasionally. You have your completed case in wax. You invest it in the two halves of the flask. You remove your wax. The next thing is to put in your rubber. I find that the average dentist cuts a number of grooves, and then puts in an excess of vulcanite and expects that to do the business. The chances are that he has just a little more rubber on one side than the other. His articulation is absolutely faulty right at that point. The only way to overcome that is to use a flask and spring plate and interpose between the two halves a layer of the material that comes on the outside of your sheets of vulcanite rubber to keep the two halves separated, using heat, allowing them to come together and remove your excess, and do that two or three times until you know that the excess is the same on all sides, and is so thin that it can be broken off with the finger when the plate is finished. You may arrange your plate ever so beautifully, but if you do not carry out that detail in the finishing of your case you will find that it will be faulty.

Dr. L. P. Haskell:

Mr. President, there is one thing I want to call especial attention to at this time. Faulty articulation is the cause of more failures than anything else. Where does the trouble come in? In the first place there should never be any interference with the anterior teeth. The six anterior teeth should never come in contact. Why? Because, in the first place, there is displacement of the upper denture. In the second place there is undue pressure that causes flexible conditions. To avoid that there should be exact occlusion on the two sides. That can be accomplished only by articulation paper. A case in the last few years hapened like this: A lady had been in the hands of eleven or twelve dentists in three cities. In the first place she needed an upper denture. She had on the lower jaw lateral incisors and cuspids, and two first bicuspid crowned roots. One of the roots was so loose that you could swing it all round. It was impossible to put a permanent denture in that mouth without removing the crowned roots, which the patient refused to permit. She had an upper set that was satisfactory, and a partial lower set that was satisfactory for a little while. In six months she said that the upper set was giving trouble. What was the trouble? The loose crowned root would swing out and the pressure displaced to the opposite side of the jaw. Now in any case where the lower anterior teeth remain, and on one side there are no posterior teeth, and on the other side one or even two bicuspids remaining, extract those two bicuspids. I believe in the retention of teeth as long as they can be made useful, but the question is: What must be done to make that set of teeth most useful and comfortable. If the extraction of certain teeth is necessary, extract. I told the patient that if she would do what I urged, I would arrange the lower teeth so the upper set would give no trouble.

There are many things connected with this subject that need consideration. There are several distinct peculiarities on the left side of the mouth that are rarely seen on the right side of the mouth, and yet those conditions are very important to the dentist.

Mention was made of the use of salt in taking an impression. Do not put the salt in when you begin to mix the plaster. You do not want it to begin to set until in the mouth.

In regard to the matter of the three point contact, I want to tell you gentlemen who have never had the fortune or misfortune to wear a full denture with a flat lower jaw that there is no grinding done, and only under very favorable conditions can the patient grind. It is just up and down, and where does the three point contact come in? Supposing you put in an upper denture and the lower teeth remain where often the posterior teeth are shorter than the anterior teeth. Where does the three point contact come in?

One speaker referred to the position of the tongue in taking the bite. Place the tongue back in the vault and see how difficult it is to move your jaw. I have found that a reliable method of securing the proper closing of the jaw.

Dr. B. J. Cigrand:

Mr. President: About three months ago Dr. Gysi, of Switzerland, sent me this new map or diagram. That gentleman is doing a wonderful work, and one which we cannot appreciate until we study it. There is no part of dentistry that is so superficially understood as prosthetic dentistry. Our greatest difficulty is that we do not get a price for our work. In view of this fact that we do not command compensation everybody says: "I cannot afford to do these things." They do not get money enough, and it is not justice to humanity. They will pay us when we do the work right.

Here is an instrument by Dr. Garrett for determining the muscular antagonism, as it is called in anatomy, and I like the term better than the word "bite." When you get ready to take the impression you say, "Close the mouth," and they close the mouth. After they close their mouth you proceed to press the handle down, and the jaw falls down where it naturally belongs. Put your models in and apply your maxillary antagonism and you have it exactly right. When I want an exact fit I never send to the laboratory. They invariably change it, but we have brought this on ourselves, as Dr. Roach says, and we ourselves can correct it.

When I made this articulator here in 1900, I made it with the view that it would be in the direction of taking the depth of the glenoid fossa and the arrangement of the teeth. I applied that principle of Dr. Haskell's, that the anterior teeth should never strike. I gave that machine to Kerr Brothers, of Detroit, and told them they could put their name on it if they would make one for me. It is known as the Kerr articulator, and in their catalogue they devote a page to it. They state that I asked nothing of them, and stated that they might put their name on it. The average men who invent things nowadays have a hard time being treated right. The inventors either die in the poor-house or become insane or commit suicide. We have a right to see that the men who invent shall be treated right, and I refer especially to Dr. Taggart.

Dr. H. F. Methven:

Mr. President, the condyle path in the glenoid fossa is made up of soft tissue. It is a mush bite, pure and simple. I have made plates, quite a number of them. Men have come in to me with seventeen or eighteen sets of teeth in their pockets, and said to me: "If you can make me a set of teeth you are a peach." I have told them right then and there: "If I can't make you a set of teeth you can eat a beef-steak and it won't cost you anything." The only reason you have plates that fit is because they come down with the condyle path and hit. This thing will go along just the same. You did not make a perfect inlay the first time you tried it. You had to crawl before you could walk, and the same is true with this. You can take any plate and send it to the laboratory, and it will never come back the way you sent it over. If you stop to consider, with a little wrench four inches long and a little bolt on there, you only put seven tons of pressure on the contents of that flask. If you have a big bunch of them on which they put twenty or thirty tons of pressure naturally something has to give. If you want a plate to stick until they can get out of the office hold it over an alcohol lamp a few minutes, and it will go in with a snap. There are many tricks of this kind, but if you want to give service you want to give anatomical occlusion. Anybody that does the work without the face bow and grinds them will either do it in the mouth or not at all. My advice to you is not to be afraid to start more than once or twice.

The second essay spoke about having the patient touch the tongue to the distal end of the plate. I take a little piece of wax about the size of a pea and place it on the distal portion of the tongue. Then they have something to put the tongue against. I do not tell my patients I am going to take a bite. I put my base plates in and tell them to smile, and then tell them to keep their jaws shut. Then when they open their lips up you have them right where you want them every time.

Dr. L. L. Funk:

Mr. President, I would like to say that I never take impressions in Plaster Paris. I use modeling compound, and as it cools I press with my finger the portion which laps over at the back end of the tray and hold it there until compound is hard. In that way I get a better impression. When I want an extra good fit I lay a wire of soft wax around the margin of the impression and heat it a little, then insert it in the mouth again. I do not recall a single failure.

Dr. Dinwiddie in closing the discussion said:

I think there is nothing that I can add to what has been said, only I want to tell Dr. Roach that the State Boards of the various states I am sure, are finding that the boys who are coming out of the colleges understand anatomical occlusion and the use of the face bow as they never have before. I notice a great difference, especially with the Chicago colleges. If the boys will only do what they say on paper they will do, I am sure you have started a grand missionary work.

In closing the discussion Dr. Schaefer said:

I wanted to make the distinction between articulation and occlusion. As I understand it occlusion is the contact existing when the mouth is in its normal position of rest, and articulation is any other position.

Some of the cases that Dr. Haskel mentioned are very extreme cases. He does not say anything about the hundreds of cases in which we can apply this method. There is a great improvement in articulation, because it is in that way that patients are able to crush their food.

DEATH OF DR. S. G. PERRY.

Just as we go to press we receive the sad intelligence of the death of Dr. S. G. Perry, of New York. An extended notice will appear in our next issue.

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EDITORIAL.

THE JANUARY MEETINGS IN CHICAGO.

On another page will be found an announcement of two important meetings in Chicago during the week of January 22-26, 1912. On the 22nd and 23rd the Chicago Dental Society will hold a clinic during the day, and have important papers in the evening; on the 24th, 25th and 26th, The Institute of Dental Pedagogics will have a very interesting meeting embracing some novel and entertaining features. It is predicted that there will be a very large attendance at these meetings. A banquet will be given Wednesday evening the 24th at which an address will be delivered by an eminent man of public affairs outside the profession.

Altogether the event will be well worth a trip to Chicago and the profession in this city stand ready to make everyone royally welcome.

THE BANE OF SPECIAL INTERESTS.

We wish to commend very strongly an editorial in the November, 1911, number of *The Dental Dispensary Record* entitled "Dr. Wiley and His Critics." This editorial endorses Dr. Wiley's stand in enforcing the pure food law, and we wish to record our approval of the stand taken therein. It is high time that the responsible people of this fair country of ours awakened to the fact that some of the special interests which have been hard hit by the pure food law are determined to die hard if indeed they will die at all. Hardly a day passes that the DENTAL REVIEW does not receive printed slips from firms and publications run by these interests attacking Wiley and trying to discredit his motives in enforcing the law. The need for such a law was never more eloquently emphasized than it is by the unseemly subterfuges resorted to by these men to befog the public. When a man's pocket-book is affected, particularly if that pocket-book is constantly being replenished by nefarious means, he sets up a howl of injustice and oppression. It is true that the enforcement of the pure food law may work a financial hardship on certain interests for a time; it may even be that innocent men will suffer inconvenience, but in the end the enforcement of any good law must result in the betterment of everyone.

And the most demoralizing thing at work in this country today is the ignoring, or rather the evasion, of law. If Dr. Wiley insists that the laws on the statute book be obeyed he is simply doing his duty, and the man who does this fearlessly and frankly in the face of all kinds of opposition is the man to have at the helm. If a man in Wiley's place had shut his eyes to the necessities of the case and had listened to the Siren Song of those financially affected the best interests of the people at large would have suffered immeasurably. And if President Taft had not stood by Wiley in a very emphatic manner the cause of just government would have received a black eye from which it would not soon have recovered. We need in the high places of our government men of back bone, and thank goodness we have some of them. Stand by your guns.

THE TAGGART CASE.

So much publicity has been given a statement to the effect that the case of Taggart vs. Boynton had been decided in favor of the defendant, that it seems proper to make a correction and publish the facts so that the profession may not be misled. The following clipping from the *Washington Star* of November 28th, 1911, explains the situation as it exists at present:

ORDER SET ASIDE—INLAY CASE AGAINST DENTIST TO GO TO A HEARING.

Owing to failure of counsel for the defendant to serve formal notice of the calendaring of the cause, Chief Justice Clabaugh has set aside his order of dismissal in the suit of Dr. William M. Taggart of Chicago against Dr. George W. Boynton, a local dentist, for an injunction to prevent the use of the Taggart system of inlay in the filling of teeth.

The case will now go to a hearing on its merits at the January term of court.

THE EDITOR'S DESK.

TOURING IN BETSEY'S HALF-SISTER.

[Continued from the December DENTAL REVIEW.]

When I was a boy trudging along a dusty country road to school, driving up the cows from pasture, digging potatoes or turnips in the fall with fingers stiffened from the cold, stubbing my toe and getting "stone bruises," riding horseback, or gathering butternuts, and eating choke cherries till I literally nearly choked myself, when I was doing all these various and essential things, I never dreamed in my wildest fancy of anything like the modern automobile—of course I didn't. And yet fate has so favored me that I have been permitted to go back over those old familiar scenes of my boyhood days sitting behind the wheel of a self-propelled vehicle and looking out upon the world from an entirely different point of view. It staggers me when I think of it—and my lifetime is not so very long either. I am still called one of the "boys" of that community, and yet if any prophet had intimated to me as a lad that I would live to see the day that I could skim over those roads at thirty or forty miles an hour in my own private machine and take an entire family with me, that prophet would soon have been without honor in his own country, because I should immediately have put him down as a lunatic. Well, strange things happen, and of all strange things to me the gasoline engine easily heads the list. I have tinkered around an automobile a great deal, and yet I marvel more and more at the miracle of it and I wind up with the conviction that I do not know anything about it. I should like to put in a year studying automobiles, and I would ask for no more enjoyable vacation than that. I envy the man who understands a car if there is such a man, but away down deep in my heart I doubt that such a fortunate individual exists. To fathom the unfathomable is the task set for the man who aspires to thoroughly understand an automobile.

The greatest trouble I had touring around my old home was with frightened horses. The first Sunday I took the car out we met a lot of people in carriages returning from church. Whether or not the orthodox horses had an intuitive horror of a car that had been put together on a Sabbath morning I do not know, but certain it is that if his satanic majesty had been turned loose among them they could not have been more terror-stricken. It mattered not that I closed the cut-out and stopped the car, the horses danced a pious jig and tried to climb the telegraph poles beside the road. Fortunately no serious mishap occurred but I was thankful to get "Sister" off the public highway that day. And most of this nervousness on the part of the horses dates back to a certain incident. Several years ago in that neighborhood a woman was killed by a fall from a carriage when her horse became frightened—or at least when she became frightened—at an automobile. The horse was not so disturbed as she was, but when she saw the car coming she threw the lines in a panic and sprang from the carriage, in doing which she fell and broke her neck. This spread terror of automobiles on the part of the people throughout that section, and this was straightway communicated to the horses. No driver of a horse was ever frightened at any object that the horse did not know it instantly and usually become frightened himself, and thus this neighborhood is not a comfortable one in which to run a car.

But even with this handicap I managed to have some royal times taking the "old folks at home" around over the country, visiting familiar scenes and enjoying every minute of it, particularly because I was giving happiness to others. I managed to give nearly every one in the village an automobile ride before it came time for me to start for home, and I look back upon this as a very pleasant feature of my vacation. The only real satisfaction of having an automobile, aside from the fascination of the machinery to which I have so frequently referred, comes from the happiness you see depicted in the faces of your passengers. It may be that they are having an automobile ride for the first time, and the look of half-fear, of wonder, of suppressed excitement, and finally of exultation is worth more to witness than the automobile has ever cost you. It has been given to you to introduce a new experience into their lives, to break the humdrum of existence, and to divert them with a novel thrill. All of which is well worth while.

But life cannot all be made up of vacations, and so one morning, bright and early, I pointed "Sister's" nose toward Toronto for the return trip home. I had prevailed upon George to accompany me to Chicago, and the girls (who had taken advantage of the mishap to the car to attend a wedding up in Wisconsin), were to meet us in Toronto and tour home with us. The first day out we made a splendid run to Ridgetown, about 185 miles, and arrived there several hours before dark. After supper the girls went out to find a moving picture show, but to their great disappointment, although the town was of some size, they failed to find one. The remark was made that no town of that size on the American side would be without its show, and it seems to be a fact that in Canada amusements of that kind are not patronized so well as they are in the States.

At the hotel we ran across some unique instructions in case of fire. A sign told us to look in the lower drawer of the bureau where we would find a rope which could be attached to a hook under the window. "Or open the door, cross the hall, go through one of the rear rooms, get out of the window on the roof and you will find a ladder running up to the roof." No need of anyone being burned in that hotel.

Next morning we started for Windsor, running along down near Lake Erie—a most beautiful run. We had dinner at Windsor and then ran the car on the ferry to go to Detroit. Here we spent some time driving around the city before starting for Ann Arbor where we had planned to remain over night.

On this trip through Michigan we encountered some of the very worst roads we had on the entire tour. The main traveled road was being repaired and we were obliged to go some distance out of our way over a road that is a disgrace to so beautiful a state as that. It was not only sandy—sand in itself is not so bad—but it was insufferably rough and winding. In some places the roots of great pine stumps extended into the roadway and it was almost like plowing your way through an unbroken forest. But no experience is without its funny side. My car has forty-inch wheels and a long wheel base which makes riding tolerable under almost any condition of roads. And yet I confess to being busy enough piloting it through this stretch of wilderness, and while my passengers were usually most charitable of any undue bumping I gave them, in this instance I could hear some decided mutterings from the Mater in the tonneau about the virtues of Michigan roads. Just when things were at their worst and I was beginning to smile—I usually smile when things are at their worst—we met another car. It was a small roadster with low wheels and a short wheel base, which tells the story. Our car was tossing badly enough but the roadster looked like a small cat boat out on the rough Atlantic. The passengers were evidently a man and his wife, and as they approached I caught the look on the man's face which spoke volumes. He had apparently been wrestling with that wheel till he was nearly exhausted and as they came along side I chirped out cheeringly:

"Fine roads!" He never answered—audibly—but his expression deepened into a mingling of surprise, weariness, anger, and disgust—chiefly disgust—and the humor of the thing struck me so forcibly that I really enjoyed the remainder of the bad roads. But seriously speaking, some of the roads between Detroit and Chicago are an outrage upon our present century civilization, and the sooner they are put in good repair the better it will be for the reputation of so fair a state as Michigan.

Even with the handicaps of bad roads we made Ann Arbor so early that we concluded to run on to Jackson for the night. Here we had good hotel and garage accomodations, except that just as we were at supper word came in that the cooks had struck and left the kitchen. We managed to get a "pick-up" meal—really enjoyable after all, from the novelty of the experience—and the next morning got up early and drove to Albion about twenty miles, for breakfast. Those early morning runs were to me most delightful, and the entire party seemed to enjoy them.

But I must hurry over the remainder of our trip for lack of space. We ran to Valparaiso that night, 185 miles, and the next morning from there to Chicago, making the trip from Toronto to Chicago in a little less than three and one-half days, which considering the roads and other handicaps, was remarkably good time. And at no part of the trip did I do any really fast or dangerous running, only once receiving the slightest protest from the tonneau. Between Jackson and South Bend we had been detained some by oil getting in the clutch and making it slip and then later by crowds near La Porte where there had been races that day. So it began to grow dark before we reached Valparaiso, and we had to light up. Running in the dark with good reflectors is perfectly delightful for the driver, but probably not so pleasant for the occupants of the tonneau, who are inclined to be more or less nervous. It seems that on this run I made faster time than was entirely comfortable, and I am told now of the direst threats that were made behind my back. The Mater is reported to have said between jolts: "Never mind—you just wait—I'll learn to run an automobile myself and then I will put him in the tonneau, and pick out a rough piece of road and *I'll show him!*" (Later: The most recent returns from the seat of war convey the comforting intelligence that she has not yet learned to run a car.)

On general principles I do not believe in running too fast for safety, but on the other hand if you have good roads and an easy-riding car there is an exhilaration in going at a good pace that puts vim into the pleasures of touring. The chief requisite is for the driver to be ever on the alert and take no foolish chances. He cannot expect to observe all the beauties of the surrounding scenery and run a car at the same time. In fact that would be too much enjoyment for any one mortal to stand—to see all the scenery and have the fascination of running the car besides.

Speaking of safety reminds me that Don made that trip to Canada and back without a mishap, and then a few days later was riding in an automobile with a friend in Chicago and was struck by a street car and quite seriously injured. Accidents with automobiles are precisely the same as with other things—no one can tell just when or how they are coming. It is not always what you do yourself which causes an accident, but what the other fellow does, which is true of other affairs desides motoring.

Some one in an unguarded moment lapsed so far from sanity as to ask me the cost of a tour such as I took this summer. The only reason that man is still living is because of a solemn compact I made with myself long ago not to kill anyone however great the provocation. As if I know how much that trip cost, or as if I would tell if I did know! The late Dr. W. C. Barrett was a very heavy man, and one day some friend asked him how much he weighed. Dr. Barrett looked at him a moment and then said: "I weigh *enough.*" That is my answer to the other question—it costs *enough.* I have known of some fanatical individual keeping a detailed account of expenditures on a tour like this, and then figuring out the cost per mileage, etc., etc. What mockery! To commercialize one's pleasures in this way is to take the pleasure out. If I had to rub two pennies together before spending them for pleasure I would cut out the pleasure and put in my time rubbing pennies.

But I can give my expectant reader an excellent method of getting at the cost of touring. Let him estimate as accurately as he can in advance the probable cost, then let him double the amount, then let him double it a few times more, then let him add a snug sum for the unexpected—which usually happens—then a somewhat liberal allowance for incidentals—which are many. After doing all this he will likely have to send home for money. But it is worth it.

BOOK REVIEWS.

APPLIED ANATOMY AND ORAL SURGERY FOR DENTAL STUDENTS. By ROBERT H. IVY, M.D., D.D.S., Assistant Oral Surgery to the Philadelphia General Hospital; Assistant Surgeon, University of Pennsylvania Hospital. 12mo of 280 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1911. Price, Cloth, $1.50, net.

This book is worth more than the modest sum asked for it. The text is clear both in expression and type, and the illustrations are vivid and readily interpreted. The book, while not intended to displace the larger works on the subject, will prove valuable to anyone looking for condensed information.

PRACTICAL DENTAL METALLURGY. By JOSEPH DUPUY HODGEN, D.D.S., Professor of Operative Dentistry (formerly Professor of Dental Chemistry and Metallurgy) College of Dentistry, University of California. Revised by GUY S. MILLBERRY, D.D.S., Professor of Chemistry and Metallurgy, College of Dentistry, University of California. Fourth Edition—Completely Revised. Pages, 373. Price, $2.50. Published by C. V. Mosby Company, St. Louis, 1911.

This book has proved a very popular one in its previous editions, and we bespeak for the new revised edition a cordial reception on the part of students and practitioners. A very useful feature of the book for teachers in colleges is the "Laboratory Procedure for Students in Dental Metallurgy" at the end of the volume, wherein is outlined a consecutive course of study, mapped out into "Periods" with specific instruction as to the work to be taken up in each period. The book as a whole is a very satisfactory one and will prove of great value to those interested in this subject.

Dorland's American Pocket Medical Dictionary. The New (7th) Edition. Edited by W. A. Newman Dorland, M.D., editor "Dorland's American Illustrated Medical Dictionary." Seventh Edition. 32 mo of 610 pages. Philadelphia and London: W. B. Saunders Company, 1911. Flexible Leather, gold edges, $1.00 net; thumb indexed, $1.25, net.

Dorland's American Illustrated Medical Dictionary. The new (6th) edition revised. A new and complete dictionary of terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Medicine, Nursing, Biology and kindred branches with new and elaborate tables. Sixth Revised Edition. Edited by W. A. Newman Dorland, M.D. Large octavo of 986 pages with 323 illustrations, 119 in colors. Containing over 7,000 more terms than the previous edition. Philadelphia and London; W. B. Saunders Company, 1911. Flexible Leather, $4.50 net; thumb indexed, $5.00 net.

These two books are admirably suited to the purpose for which they were intended. A distinguishing feature of the latter and larger volume is the great number of illustrations and the excellence of the cuts. The colored work in these cuts is most impressive and reflects great credit upon the author and publisher.

Dental Materia Medica and Therapeutics. A Text Book for Students and Practitioners. By Hermann Prinz, D. D. S., M. D., Professor of Materia Medica, Therapeutics and Pathology, and Director of the Research Laboratory, Washington University Dental School, St. Louis. Second Revised Edition. 595 pages. Price, $3.00. Published by C. V. Mosby Company, St. Louis, 1911.

Some writer has said that: "Of the making of books there is no end," and this would appear to be especially true of dental literature in recent years. And it is the most hopeful sign of the times when this same literature is being bought and read by the profession. A profession which reads extensively cannot fail of advancement, and while the charge has frequetnly been made that dentists are not readers, yet the experience of authors and publishers goes to show that some one in the profession is buying books and the inference may logically be had that they are being read. Men do not buy books of this character to ornament the library.

In the present volume Dr. Prinz has brought to bear his wide experience in this field amplified by extensive reading of the literature of the subject not only in English but in other languages. His bibliography is very rich, and one may feel sure in going over the volume of gaining a comprehensive view of the various theories of authors who have written before. Aside from this the book is valuable as a reliable guide in carrying out the various theories in every day practice. The thanks of the profession are due to the author and the publisher for presenting so valuable an addition to our literature.

PRACTICAL HINTS.

EDITED BY J. E. SCHAEFFER, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, THE DENTAL REVIEW, 55 State Street, Chicago, Ill.)

For Cauterizing Tooth Surfaces:—Heat a piece of platinum wire, attach to it a crystal of "silver nitrate" and soften it into a little ball at the end of the wire. The platinum wire makes a convenient handle for carrying the "silver nitrate" and holding it at the exact spot one wishes to cauterize.—*M. R. Harned, D. D. S.*

The Best Wheel:—The best wheel to use for finishing gold inlays preparatory to setting is a thin carborundum wheel similar to the S. S. White No. 6. The work can be done very much quicker, with freedom from friction heat and if a light pressure is used, there is very much less danger of the wheel catching and throwing the inlay.—*J. Austin Dunn, D. D. S., Chicago.*

To Remove the Loose Flexible Ridge:—To remove the loose gum on the anterior part of the ridge which follows the wearing of a full denture, inject a little of a cocain solution into the surrounding tissue and with a sharp lance, assisted by a pair of pliers, remove the part. This can be done without pain and the result will be very satisfactory. A good antiseptic wash will be needed by the patient for several days, but the case will soon heal.—*G. H. Henderson, L. D. S., D. D. S., Springfield, Ill.*

To Facilitate Getting Rid of the Superheated Cushion of Air in an Investment when Casting:—When the wax model has been invested on the under surface of the investment, namely that which comes in contact with the base of the casting machine, carve a concave hollow, about one-eighth of an inch deep and extending to an eighth of an inch of the inlay ring.

When the pressure comes from above in casting it forces the superheated air out through the investment into this space, which offers much less resistance than if the investment were fitting tight on the base of the machine.—*A. Dangar Burne, L. D. S., D. D. S., Sidney, Australia.*

Inserting a Gold Filling Systematically:—First you have space; second, clean out the cavity partially; third, smooth the margins with sandpaper disks, "Grit O," not finer. Apply the rubber dam; dry out cavity. Now here is the trick: Insert wedge quite tight at cervical margin; this will push gum away; then wet wedge and wipe out cavity with alcohol. As the wedge gets wet it swells and widens the space. You are ready to prepare your cavity; then fill it. Moss fibre gold in the bottom, then any gold you choose, using automatic mallet; soft blow for first one or three pieces; then the mechanical mallet and "it's did."—*James W. Cormany, D. D. S., Mount Carroll, Ill.*

Occlusion Plus Articulation No. 8:—Having our wax base plates of the proper form bringing out facial restoration and with their occlusal surfaces modified from flat planes to curved surfaces, we proceed to arrange the upper teeth in the following manner: With a pocket knife cut away from the left of the median line, sufficient wax to permit of the incisors and cuspid being placed in their proper positions. This should be done as artistically as possible. The left bicuspids and molars are now placed with their occlusal surfaces resting on the lower base plate.

The curved surface of the lower base plate will give the bicuspids and molars the proper inclination both laterally and anterio-posteriorly. Having completed the arrangement on one side, the same procedure is carried out on the opposite side.

A Cast Splint:—In cases where one or two lower incisors have become very loose and much elongated, it is possible to retain them in comfort for a considerable time by making a long cast splint in two lateral halves, which extends from the firm teeth on one side to the firm teeth on the other side. In such cases there is nearly always space enough between the teeth to place a couple of slender iridio-platinum bolts to draw the two halves of the splint firmly together. These bolt heads should be neatly countersunk in the material of which the splint is made, and after drawing up, the bolts themselves should be cut off and finished smooth. A space for the floss or quill pick should be left between the lower margin of the splint and the gum. This splint is not an ideal thing, but in some cases fills a desperate need that nothing else will reach. —*Arthur G. Smith, D. M. D., Peoria, Ill.*

"Hints" on Dentures:—Plates usually have strong adhesion to the membranes without teeth, but after teeth are attached to them and closure of the jaws is made upon the teeth, then the battle of opposing forces begins. Every point of bearing that is out of balance with some other point or points on the opposite side within the differential area—in lateral, direct or protrusive movements of the lower jaw, is a disturbing factor to their efficiency and of much discomfort and annoyance to the wearer. A few nagging points of contact, that will occur even with the most painstaking care, will essentially spoil the efficiency of an otherwise well constructed denture. The natural teeth, by wear and accommodation, may overcome obstructions of this kind, but artificial teeth might be worn to the "brink of the crack of doom" and they would occlude no better.—*T. W. Pritchett, D. D. S., Whitehall, Ill.*

Wax and Its Treatment:—Have you seriously considered how absolutely essential the proper wax pattern is in the making of an inlay? To be scientifically correct, a wax must be of such a nature as to be sluggish in its movement, and which, at the temperature of the mouth will absolutely break before it will bend. Without this quality there is no certainty that it has not become distorted, especially in complicated cavities.

With soft waxes and the use of cold water one can get fairly good results in ordinary cavities, but where there are any complications, such as we find in M. O. D. (mesial-occlusal-distal) cavities the wax, as soon as the cold water is withdrawn, almost immediately resumes the temperature of the mouth, and while it may be easily withdrawn from the cavity, there is no telling to what extent it may have been bent, and this condition will not give you a high percentage of successes in just the places which should be the most accurately filled.—*W. H. Taggart, Chicago.*

Partial Plates:—It is advisable when making partial plates to minimize the number of teeth to be supplied thereby reducing the leverage as much as possible. The teeth that are to be put upon a plate should be placed first for masticating purposes and secondly for the cosmetic effect, and in no case should we employ means that favor either one at the expense of the other. In other words we should adopt procedures that will equalize the two requirements. We often see too many teeth put upon partial plates in the effort to supply substitutes for all the teeth that have been lost, when half the number would fulfill the cosmetic requirements, and at the same time afford a more satisfactory masticating surface. In my opinion it is better to have one tooth doing good service than to have several that are worn most of the time in the pocket or the bureau drawer. This applies more especially to extension cases where molars and bicuspids are missing. As an illustration we will take a case where all the teeth are out, posterior to the cuspids in the upper jaw, and the remaining teeth are affected with pyorrhea or otherwise loosened. If a suction plate is to be made it should cover as large an area as possible and full complement of teeth may be supplied, but if some form of mechanical attachment is to be made to the cuspids the number of teeth and size of the plate must be reduced to the minimum.—*F. E. Roach, D. D. S., Chicago.*

Infection After Extraction:—Infection after extraction is often due to the patient not taking the proper care in keeping the sockets clean. This is especially true of the sockets located in the lower jaw. One good reason for it is, that when a patient rinses the mouth with a wash, it does not pass into the socket, but over the surface. Therefore, if an abscessed tooth has been removed the socket should receive the proper treatment and the patient impressed with the importance of keeping it clean. They may use a mouth wash at frequent intervals during the day, and then see the dentist each morning for treatment, as the socket will become foul over night, as the patient is not able to cleanse it thoroughly. All lower sockets become cess pools and are not self-draining like the uppers. Therefore, they need close attention and are slower in healing.

Do not neglect these treatments because it means a fee, as you will receive more praise from your patients when you impress them that you are not negligent, but thorough in your practice.—*A. Brom Allen, D. D. S., Chicago.*

MEMORANDA.

SOUTH DAKOTA DENTAL SOCIETY.

The thirtieth annual meeting of the South Dakota Dental Society will be held at Sioux Falls, S. D., May 14 and 15, 1912. Adoption of a new constitution and by-laws will take place at this meeting. J. D. Donahoe, Secretary, Sioux Falls, S. D.

ALUMNI ASSOCIATION DENTAL DEPARTMENT MARQUETTE UNIVERSITY.

The sixth annual clinic and Manufacturers' and Dealers' Exhibit will be held January 30, 31, February 1st, 1912, at the Milwaukee Auditorium, Milwaukee, Wis. All ethical members of the profession are cordially invited to attend. W. F. Straub, Secretary.

G. V. BLACK DENTAL CLUB.

It is with regret that the G. V. Back Dental Club of St. Paul, Minn., announces that it will be unable to hold its annual clinic in February, 1912. Illness of some of the members and of others whom we expected to help us, make it necessary for us to take this action. R. B. Wilson, Secretary, 206-8 Lowry Bldg., St. Paul, Minn.

MANUFACTURER'S NOTICE.

Manufacturers desiring space for exhibition purpose at the Chicago Dental Society's Clinic and Exhibit, to be held in the College of Dentistry, University of Illinois, January 22nd and 23rd, should apply at once, giving amount of space desired. Direct all correspondence to Charles E. Jones, Chairman of Exhibit Committee, Harrison and Honore streets, Chicago, Ill.

ARIZONA DENTAL SOCIETY.

Officers elected at the last meeting: President, W. P. Sims, Bisbee; vice-president, W. A. Baker, Tucson; secretary-treasurer, H. H. Wilson, Phoenix. Board of directors—W. P. Sims, Bisbee; H. H. Wilson, Phoenix;

J. A. Messinger, Phoenix; J. L. O'Connell, Phoenix; J. H. Blain, Prescott. Board of Censors—L. B. Cary, Douglas; F. P. Gaines, Holbrook; W. L. Spates, Globe. Committee on Public Dental Education—H. H. Wilson, Phoenix; J. A. Lentz, Phoenix; L. C. Shaw, Tucson.

DEATH OF DR. F. J. GOSTELOW.

Dr. Gostelow died at Prophetstown, Ill., November 13, 1911. He was born July 16, 1870, in Rockway, Mich., graduated at the Chicago College of Dental Surgery, 1900, and had practiced in Prophetstown ever since. He was a young man of exceptional promise and left a host of friends in the vicinity. In 1901 he married Miss Mary M. Campbell of Ottawa, Ill., and to them were born two children, Mary Ione, who died when less than a year old, and Willard C., who survives.

RECENT PATENTS OF INTEREST TO DENTISTS.

1,001,362. Dental appliance, Charles W. Davison, Jefferson City, Mo.

1,001,916. Dental handpiece, Thomas T. Alkin, Gouburn, New South Wales, Australia.

1,001,638. Dental plugger, William F. E. Gubitz, Hartford, Conn.

1,002,536. Orthodontia appliance, Christoph F. Montag, Blue Island, Ill.

1,002,766. Controller for electric motors, Adolph W. Schram, Riverton, N. J., and E. B. Wilford, Merion, Pa.

1,002,773. Form for producing artificial tooth crowns, Edward R. Stevenson, Oakland, Ore.

1,002,468. Massaging device for the gums, William F. Strangman, Salem, Mass.

1,002,784. Dentist's balance, William O. Tabot, Biloxi, Miss.

1,003,213. Dental tool, Frank H. Skinner, Chicago, Ill.

Copies of above patents may be obtained for 15 cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

COMPLIMENTARY DINNER TO DR. WILLIAM WALLACE WALKER.

A complimentary dinner will be tendered to Dr. William Wallace Walker on the evening of Saturday, January 20, 1912, at the Hotel Astor, New York City. The dinner is given by the First District Dental Society of New York.

Dr. Walker has devoted himself for many years to the advancement of the interests of this society, and, in addition to inaugurating a very successful series of post graduate study sections, has also harmonized the conflicting society interests of the metropolis, by merging all the existing societies into the First District Dental Society which therefore now includes the New York Odontological Society, the New York Institute of Stomatology and the New York Institute of Dental Technique.

The committee makes this public announcement because they fear that some of the many hundreds of friends of Dr. Walker throughout the country may accidentally fail to receive an invitation. All who desire to be present are therefore requested to waive formality and send their acceptances at once to the treasurer, Dr. James W. Taylor, 106 East 57th st., New York, enclosing the subscription price, $10. Safford G. Perry, Chairman. Henry W. Gillett, Secretary.

[This occasion should bring out the best men in the profession everywhere. To honor the "Prince of Good Fellows" will be not only commendable, but most enjoyable—Editor DENTAL REVIEW.]

PREVENTING TUBERCULOSIS.

Illinois and Chicago are competing in a million dollar contest. The result will have vital bearing upon thousands of lives not only in this state but throughout the country. The big problem involved is the organized and effective control of tuberculosis.

With the first of December the Red Cross seals were placed on sale in every state in the Union and the proceeds will go to the fight on tuberculosis. Just how effective the 1912 campaign against the great white plague will be depends almost wholly upon the success of the sale of the stamps.

The Chicago sale is under the auspices of the Chicago Tuberculosis Institute, which has been the most important factor in expanding the anti-tuberculosis movement in Chicago. The seals throughout the state are handled by the Illinois State Association for the Prevention of Tuberculosis. Both the city and state organizations are affiliated with the National Association for the Study and Prevention of Tuberculosis.

The seals are issued by the American Red Cross, of which President Taft is the head, and bear the endorsement of civic, philanthropic, medical and labor bodies.

The raising of $1,000,000 by means of the seals means the sale of 100,000,000, for they sell at one cent each. Chicago is expected to sell more than 2,000,000 of the little stickers. The large department stores, labor organizations, large and small firms, and thousands of individuals sent in advance orders for the seals, which are to be placed on the backs of the envelopes only.

ANNUAL CLINIC OF THE CHICAGO DENTAL SOCIETY, MONDAY AND TUESDAY, JANUARY 22 AND 23, 1912.—ANNUAL MEETING OF THE INSTITUTE OF DENTAL PEDAGOGICS, WEDNESDAY, THURSDAY AND FRIDAY, JANUARY 24, 25 AND 26, 1912. CHICAGO.

Immediately after the last meeting of the Institute of Dental Pedagogics, when it was decided to hold the 1912 meeting in Chicago, plans for a meeting of unusual interest were initiated. The Chicago Dental Society voted to hold its annual meeting and clinic a week later than its regular time, in order that it would immediately precede the meeting of the Institute. As a result there will be, for members of the Institute, five consecutive days of dental meetings and it is hoped that the joint program will prove sufficiently attractive to induce not only an unusually large attendance but that those who do come will be present for all of both meetings. As there are several features of more than ordinary interest in the programs of both meetings a careful reading of this announcement is requested.

PROGRAM OUTLINE.

CHICAGO DENTAL SOCIETY.

Monday, January 22, 1912.—Manufacturers' exhibit (all day). Monday evening, 8 o'clock: A stereopticon lecture of Pathological Conditions Found in Human and Animal Crania; also illustrating the author's work in hunting and trapping. Dr. William Bebb, Los Angeles, Cal.

Tuesday, January 23.—Clinic (all day) College of Dentistry, University of Illinois. Manufacturers' exhibit (all day). Tuesday evening, 8 o'clock: Report of Recent Studies of Deposits of Calculus and Their Prevention. Dr. G. V. Black, Chicago.

INSTITUTE OF DENTAL PEDAGOGICS.

Wednesday, January 24, 9 o'clock.—Address of Welcome, Mayor of Chicago. President's address, Dr. Donald M. Gallie, Chicago. Report of Master of Exhibits. Report of Commission on Text Books. Wednesday afternoon, 2 o'clock: "The Teaching of Comparative Odontology," Dr. William Bebb, Los Angeles, Cal.; discussion of exhibits by representatives of the various schools. Wednesday evening, 8 o'clock: Banquet. Address, prominent speaker of national reputation.

Thursday, January 25, 9:30 to 11:30 o'clock.—Visit Northwestern University Dental School. Luncheon, 11:30 to 12:30. Automobiles to West Side. Visit Chicago College of Dental Surgery, 1 to 3 o'clock; visit College of Dentistry, University of Illinois, 3 to 5 o'clock. Thursday evening, 8 o'clock: "The Teaching of Clinical Dental Pathology," Dr. H. T. Smith, Cincinnati, O.; Discussion of Teaching Facilities and Methods, with especial reference to the visit of the day to the Chicago schools; Prosthetic Dentistry, Dr. Ellison Hillyer, New York; Operative Dentistry, Dr. H. M. Semans, Columbus, O.; Operative Technics, Dr. D. M. Cattell, Memphis, Tenn.; Oral Surgery, Dr. V. M. Blair, St. Louis, Mo.; Histology.

Friday, January 26, 9 o'clock.—"The Teaching of Dental Histology," Dr. F. B. Noyes, Chicago. 1:30 o'clock: "The Teaching of Applied Physics and Chemistry," Dr. Marcus L. Ward, Ann Arbor, Mich. Report of Commission on Nomenclature; Report of Dental Index Bureau; Exhibits by the various colleges during the meeting.

APPOINTMENT OF DR. MC AFEE.

Dr. Samuel H. McAfee has been selected to fill the chair of operative dentistry, dental pathology and therapeutics, in the dental department of Tulane university recently made vacant through the death of Dr. Louis D. Archinard.

IOWA STATE DENTAL SOCIETY.

The next meeting of the Iowa State Dental Society will be the fiftieth, and will be appropriately celebrated on May 7, 8, 9 and 10, 1912.

A special effort is being made to have present all the old members who are alive and Thursday, the 9th, will be a special "Home Coming Day," when there will be clinics, papers and speeches by old Iowa men. A historical paper is being prepared by Dr. J. B. Montfort of Fairfield. Pictures of early practitioners will be shown and an appropriate banquet served in the evening.

COST OF PLATINUM.

Few are aware of the enormous increase in the cost of platinum since its early use in dentistry. I wrote to the White Co. recently, asking them to give me the price of platinum in 1845, when I began using it for pins for teeth. I was learning to make carved sections for the individual case. The reply is as follows: L. P. HASKELL.

"Dear Sir: We are in receipt of your favor of recent date, in regard to the cost of platinum in 1845. We regret very much to say that our records do not go back as far as that date, which was just one year after Dr. Samuel S. White began business in Philadelphia. We can say, however, that in 1875 platinum was selling for $6.00 per ounce and in 1882 for $5.88 per ounce. From 1875 to 1889 it fluctuated from $6.00 to $7.84 per ounce. In 1901 it was $16.66 and has risen gradually in the past ten years to its present unusually high level. The supposition is that platinum was selling in 1845 for between $5.00 and $6.00 per ounce, although of this we cannot tell you positively." "Yours truly,

"THE S. S. WHITE DENTAL MFG. CO."

THE

DENTAL REVIEW.

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THE ORAL HYGIENE PROBLEM.*

BY GEORGE EDWIN HUNT, M. D., D. D. S., INDIANAPOLIS, IND.

The oral hygiene problem is an economic and sociologic one.

Some years ago, when the campaign against tuberculosis was in its infancy, some congressman of great faith but meager discretion, introduced a bill in Congress which if passed would have appropriated $10,000 of the people's money for the purpose of investigating the cause of tuberculosis and the best means for its prevention. The bill was promptly referred to the committee on acoustics, or gilding the capitol dome, or something like that, and henceforth was known of man no more. At that same session a bill was introduced and passed, appropriating $25,000 for the purpose of investigating the causes and prevention of hog cholera. Which led Dr. J. N. Hurty, secretary of the Indiana State Board of Health, to publicly enlarge upon the advantages of being a hog instead of a man, in these United States.

If you are a grower of hogs or cattle or horses and an epidemic threatens to destroy them, the department of agriculture will, on your request, send you an expert to look after your live stock and bring them through to a state of health. If you are raising corn or wheat or cotton or sugar beets and something goes wrong with your crop, the government stands ready to put at your service its vast machinery for ascertaining and overcoming your difficulties. But if you are engaged in merely raising children, future citizens of your country, the government's willingness and ability to assist you in bringing them up scientifically is farcical as compared with the help it can extend to you in keeping the boll weevil out of your cotton or "lumpy jaw" from spreading amongst your cattle.

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*Read before the Chicago Dental Society, November, 191

We are only just beginning to learn the fundamental truth that the greatest asset a nation can have is its human asset. The citizens of the nation are the foundation stones of its wealth and prosperity. All our wealth, our commerce, our industries, are due to the labors of the people. If our citizens continue to grow, mentally, morally and materially, the nation increases in world importance. But the citizens of a nation cannot advance mentally, morally and materially unless they also advance physically. That is axiomatic and incontrovertible. Rome declined mentally, morally and politically as her citizenry declined physically. Right living and a due regard for health rules must ever be the basis on which the physical welfare of the people depends, and without healthy bodies we cannot expect to find the sound mind.

In all this I want to make clear to you the distinction between the "material prosperity" of a nation and the "money" held by the people of that nation. Money in itself does not add an iota to the material prosperity of a nation. Those who accumulate, or, as the phrase has it, "make" money, are frequently not producers at all of material wealth. Money making produces nothing. The fact that we think so is one of the peculiarities of our civilization. The accumulation of a hundred millions of dollars, so far as the act of gathering together those dollars, or the paper which represents them, is concerned, has not added a penny's worth to the material welfare of the nation. Nor would it add to the material welfare of the nation if that hundred millions of dollars were pro-rated among the people. Material prosperity means an increase of material of actual use in the life of the individuals of that nation. Money merely represents an artificial means, arbitrarily selected, by parting with which, those who have money may secure these objects of real and material importance to life.

All people are either producers or non-producers. Most producers only produce to a part of their capacity. There are various reasons why most people do not produce to their full capacity. Some are too lazy to do so, others have not had the proper preliminary training, still others are laboring along the wrong groove in life, and a large number are not physically fit to do so. Some non-producers ought to be producers of, perhaps, small capacity. Other non-producers are hopelessly non-producers. Children and the aged are of right non-producers. Our present civilization in the United States does not tend to remedy this matter. Many non-producers, as our tramps, our "middlemen" in business, and many others, under a more enlightened scheme of existence, would be added to the army of producers, thereby increasing the material prosperity of all. And *general* material prosperity means a better educated, a more healthy, a better nourished, and a happier people.

All non-producers exist at the expense of the producers, and the wealth of the nation is the resultant of the efforts of its producers, less the tax of its non-producers. Insane hospitals, institutes for the deaf and dumb and the blind, schools for the feeble minded, tuberculosis sanitariums, penitentiaries, houses of correction, jails, work-houses, poor-houses, and the like, are all maintained by the producers for the benefit of the non-producers. Incidentally, I might add that the men in the army and navy, in so far as they are men of war, men in scores of political offices, commission men, brokers, and persons in many other pursuits, are really non-producers and existing at the expense of the producers of the nation.

You and I are producers. If that statement startles you, permit me to make an explanation. A producer is anyone who contributes to the physical, mental or material welfare of the people of the nation. I do not mention moral welfare for I believe a perfectly normal person, mentally and physically, is of necessity one of good morals. Not, necessarily, a person of good moral "character" for "character," in this connection, means "the moral qualities assigned to a person by repute" and is therefore a matter of some one's opinion, but a moral person nevertheless. Now, if everyone were a producer in the sense that the farmer and the artisan—the purest forms—are producers, the nation would inevitably deteriorate physically, mentally and materially, because something more is needed than mere material prosperity for man to reach his highest plane of usefulness. The possession of material necessary to mere existence is not enough to round out the perfect life. Man must also have a knowledge of and an interest in things which awaken and develop his intellectual and artistic being, or his life is not well balanced. Therefore teachers; artists, literary, musical, theatrical—some of them—and of other sorts; managers of businesses and their subordinates, and this includes our necessary political office-holders who should be nothing but the managers of our public business; physicians, dentists, law-makers—a few—and law enforcers, but not practitioners of law; all are producers in the sense that they increase either the mental, material or physical welfare of the people. They are necessary for the uplift of the whole mass and are therefore producers, although indirect ones. Nevertheless, they are as necessary in the scheme of social and economic progress as are the true producers.

Of late years the attention of civilized nations has been more and more directed toward the solving of the problem of how best to increase the efficiency of our producers and to decrease the number of our non-producers. In a way this has been forced on the attention of the thinkers of the world owing to the fact that in spite of the great progress made in late decades in mental, material and moral directions, the number of our non-producers has increased proportionally faster than the population. Permit me to call your attention to the proportional increase in the number of insane, of criminals, of paupers, and of other non-producing classes to support this assertion. William H. Allen says, "The greatest of graft concealers is inefficiency. Waste-graft does more harm than theft-graft."

The many sociologic, economic and hygienic movements in this and all other civilized nations in late years, are movements designed to further the solution of this great world problem of how best to increase the efficiency of our producers and to decrease the number of our non-producers. The tenement house question, the slum problem, the White Slave question, the liquor question, the "special interests" question, the tariff question, the graft problem, the natural resource conservation question, the tax problem, and practically all other questions of great national importance, in the final analysis resolve themselves into the single query, How can we best increase the efficiency of our producers and decrease the number of our non-producers? It is the big world problem today. In its solution lies the greatest economic good the world can face. It is the problem of the ages.

The greatest limit of efficiency in the citizen can only be attained under conditions of perfect health. Health is the greatest boon that can be conferred on mankind. This truth has been quite generally acknowledged in the past but its application, in the minds of economists, has been largely to the individual and not to the mass. The effort has been to ameliorate the condition of those already partially or wholly non-producers on account of their physical condition, instead of trying to better the environment of the mass and thus prevent this deterioration in those least fitted to resist the encroachment of disease. In our country the mental welfare of all our citizens whether of high or low degree, has been better cared for in past decades than by any other nation in the world, with the possible exception of Germany, but it has only been in recent years that we have realized the absolute necessity of strenuous and united effort along the line of better public health if greater national efficiency is to be attained. Today the movement looking toward the prevention of disease is spreading over the states from ocean to ocean. The public drinking cup is being gradually abolished; the public roller towel will soon be an object of curiosity and dread; the pernicious fly, bred in filth, raised in corruption, and a disseminator of disease in its maturity, is recognized as an enemy to society; fresh air is demanded as the right of all; pure food and pure drink are declared to be the heritage of even the least pretentious; and the movement for the conservation of the health of the people, the movement for increasing the efficiency of our producers and decreasing the number of our non-producers is attaining a significance never before conceded by the world. The cleaning up of Cuba and the rejuvenation of the Canal Zone, sanitarily, by the United States Army are latter-day examples of this. And the oral hygiene movement is but a part of this great, grand, world-wide movement for a better and a more healthful life on the part of the people.

It seems superfluous, before this audience, for me to touch but in the lightest manner on the now generally recognized obvious necessity for better oral conditions among the mass of the people, if greater efficiency is to obtain. All thoughtful men and women, not only in the medical and dental professions, but among those of the laity interested in sociologic and economic problems, freely acknowledge it and insist on its vast importance. However, with your indulgence, I will elaborate upon a thought or two.

A very large percentage, much more than a mere majority, of the physical ills mankind undergoes are due to what we eat, how much of it we eat and how we eat it. If all mankind were correct of conduct in respect to these three matters, the average income of practitioners of medicine, if the present number persisted, would be nearer $100 per year than the $650 per year with which they are now credited. Rheumatism, cancer, gout, gastralgia, gastritis, cardialgia, enteritis, pyorrhea alveolaris, diarrhœa, constipation, colitis, hemorrhoids, arterio-sclerosis, nephritis, diabetes, all forms of anaemia, the protean manifestations of auto-intoxication, and a score of other maladies which take their yearly human toll of suffering and death, are largely or wholly due to faulty metabolism. Faulty metabolism spells malassimilation. Malassimilation means imperfect digestion. Imperfect digestion is caused by either eating the wrong thing—eating too much of what we eat, or eating what we eat in an improper manner. You cannot escape the conclusion and the more you study the question the more firmly you will be convinced that of all the important steps in preserving the health and well-being of the human body, none is of more importance than what we eat, how much of it we eat, and how we eat it.

If the above is true, and I do not believe it can be successfully controverted, the importance of the mouth and teeth in the preservation of the physical welfare of the nation has not been exaggerated by even its most ardent advocates. It is the key to the situation. As the only three or four inches of the thirty feet of alimentary canal absolutely under the voluntary control of the individual, and as the area responsible for properly beginning the preparation of all food for serving its appointed task in constructive metabolic activity, the condition of the mouth and its contents, and their preparedness to properly and perfectly perform their physiologic function, looms large as a potent factor in the prevention of faulty metabolism in the whole body. And this is the great fact now recognized by all body scientists who have given the matter thought. This is the heart, the soul, of the oral hygiene campaign. So long as the mass of the dental and medical profession and the vastly greater mass of the laity consider dental services as a means for the prevention of pain and the preservation or restoration of tissue for cosmetic reasons only, the oral hygiene problem will remain unsolved. When the people realize that oral health is a large factor in the preservation of the health of the other body organs and tissues; when our school authorities, our law makers and our law enforcers are educated to the point of knowing that efficiency in the child and in the adult is more often marred by abnormal conditions of the mouth and its contents than by acquired imperfections in any other one organ, then will the oral hygiene problem be in a fair way for a satisfactory solution, but not before.

What is the best way to push the propaganda before the people and thus hasten the time when its benefits will be accruing to the people of the nation? You know the truth. I know the truth, and a few hundreds of enlightened physicians and sociologic workers know the truth. But how can we impress it upon the great mass of the people so that those occupying the "seats of the mighty," who can make or mar the early success of the movement, may be constrained to make and not to mar. A year ago, I wrote an article for the magazine I have the pleasure of editing, asking that same question, What is the best way? Before writing that article I had formulated in my own mind what would be the best and the quickest way, and I hoped that others, also, might see it as I did, but as they did not do so I begin to wonder whether my deductions and conclusions were at fault. Briefly, my opinion then, was about as follows:

No big movement for the amelioration of human ills of whatever character is ever brought about spontaneously, or even quickly. All such forward movements are the result of patience, persistence and infinite minute forward steps. I feared that many interested in the oral hygiene movement, seeing the great truths it compassed, were sanguine that mere statement of these seemingly self-evident facts, would be sufficient to secure their world-wide adoption as a creed. But the history of intellectual advancement is all opposed to such a hasty adoption ot any ameliorative measure. To illustrate, there are people yet in these United States and in this twentieth century who oppose vaccination and serum therapy. So if it was true that great movements inevitably move slowly, we could only fully impress the masses of the people by a generation or two of persistent, consistant effort. I believe today, that that is the ultimate soluion of the problem of having the matter of better hygienic oral conditions accepted by the general public, as I shall explain later. But in the meanwhile, is there a way to force better mouth conditions on the public? In my opinion, but one.

The first step in the early solution of our problem is to prove to the medical profession at large, that the dentist and the physician not only should walk hand in hand but must walk hand in hand. The physician needs the dentist even more than the dentist needs the physician. There are only very occasional cases where the dentist requires the aid of the physician to round out the perfectness of his treatment, but there are few days indeed that the physician in general practice, and even most specialists, would not be materially aided in their work of physically benefiting humanity, by seeking the cooperation of the dentist. The time has come when the obstetritian, the rhinologist, the otologist, the aurist, the genito-urinary specialist, even in specific cases, the specialist in gastric and intestinal disorders, and the general practitioner, will be remiss in their life work if they ignore oral conditions. One of the best diagnosticians in the medical profession in Indiana said to me less than a month ago that he thought he was referring about 75 per cent of his cases to their dentist. Since this is so, one of our first cares should be to convince more of the medical profession of this truth. In this effort, I am pleased to say, we will receive the able and efficient aid of the most enlightened men in the medical profession. Success in this effort will largely increase the interest of the people in better mouth conditions. People will do things, if in fear of sickness or the grave, that they will ignore if the incentive to do is but a fear of pain sometime in the future, or the possibility of what they consider a slight esthetic marring of their person. So that I consider the timely cooperation of the medical profession, inevitable as it finally will be, a *sine qua non* to the early solution of our problem. Their interests and our interests are so inextricably interwoven, if the members of both professions can be brought to see it, that the greatest good for humanity can only be attained by concerted action. That this is coming to pass is true. That it is coming very slowly is to be deplored.

I am free to confess, however, that to my mind the successful educating of the adults of our people, even with the able assistance of our confreres of the medical profession, is too monumental a task for achievement in one generation. When we review the past and recall how slowly the people accept the obvious facts which lead to better health and how stubbornly they persist in habits of life and methods of living which science has repeatedly shown will lead to disease and death, we can hardly hope to create a revolution in oral conditions in one or two decades. I would not, for an instant, deprecate the importance of any efforts being made in that line, for I believe that every convert now is worth a score in the hereafter, but I am not optimistic regarding widespread results in the immediate future, and I therefore believe that in connection with our educational work among the physicians, our public press campaigns, our public platform work and our office educational work, that our greatest efforts should be directed toward the education of the children, the future citizens who shall dictate the future sociologic policy of the state.

I believe that consciously or sub-consciously, this has been the thought of most workers in the campaign. More effort has been directed toward amelioration of oral conditions amongst the children than in any other line of endeavor. And much of it, I am convinced, has been ill-advised and harmful to the ultimate success of the cause rather than beneficial. Wholesale examination of the mouths of the school children, in the future, can have but a local moral effect. For that purpose it is of great value and should be performed. The fact that the school children in New York or Chicago show a certain percentage of defective mouths is but a matter of academic interest to the citizen of St. Louis or Indianapolis, but when he learns that the school children of his own city, in schools where his own children attend, show a large percentage of defective mouths, his interest is enlisted at once. An atrocious murder in our own community invariably arouses our interest many fold more than an even more atrocious one remotely committed. So that I believe inspection of the school children's mouths is worth the time and trouble it requires for the moral effect it has upon the community in which it takes place. But the time when it will teach us anything concerning oral conditions among the children has long since passed.

Where, in my opinion, the work among the children has been ill-advised and harmful to the cause, has been in those communities where free clinics for the children of the poor have been established, flourished for a time and then died of inanition. The average reformer, in the first blush of the newly found knowledge of a great wrong being perpetrated upon humanity, hungers for immediate action in the direction of a tangible effort to redress the wrong. His mind leaps from unaccustomed contemplation of the error to immediate redress of it, which is commendable and eloquent of his goodness of heart, but frequently equally eloquent of his lack of worldly wisdom, especially in reforming things. Free dental clinics, instituted, conducted and supported solely by members of the dental profession, have yet to prove their success. The fine enthusiasm which leads to their establishment seldom survives the tempering fires of time. The smouldering remains of their immature beginnings dot the map of many of the United States. It was a logical and a foregone conclusion. No free dental clinic, financed and conducted solely by dentists, has stood the test of even a few years. I do not blame the men who started these charities. If there was a fault committed, it was a fault of judgment, a fault of the head and not of the heart. They saw a great economic need and believed all that was necessary for its permanent correction was to call it to the attention of the people. Their purposes were high and their hearts and minds were filled with a pure philanthropic fire but it was inevitable that the fine enthusiasm responsible for the beginning, should have slowly dwindled under the chastening lash of time, of expense, and of non-appreciation, until it spent itself. It takes a stern mold of man to steadily neglect his livelihood and spend his modest income in the pursuit of an ideal, no matter how lofty it be.

Free dental clinics are necessary and they will come. But they are of right a state affair and the state should support them. In many communities, no doubt, they can be secured by the co-operation of the dentists with charitable organizations or with philanthropists, as has already been done in New York City, Rochester, Newark, Boston, and other communities. Where individuals or organizations can be persuaded to assist in the work to an appreciable degree, or where the dentists have the assurance of such assistance if they prove the worth of the movement, by all means should clinics be established without waiting for the state to act, for to my mind, the establishment and continuance of free clinics is one of the last steps in the problem. But it is the state's work, and until the state undertakes it, the free clinic will be on a precarious and an insecure footing. The state is the beneficiary in making these children better physically, therefore the state should shoulder both the responsibility and the expense. The greater efficiency of the individual in childhood saves money for the state in educational expense; the greater efficiency in adult life either saves the state the expense of maintaining a non-producer, or increases its revenues from one who is a more nearly perfect producer. You may call this socialism if you will. I will not be offended. Personally, I call it common sense. On this point William H. Allen says, "There never will come a time when the most direct means of promoting health, education and opportunity will not be through government."

If we grant the above line of argument to be logically correct, how shall we achieve the desired result? Again, I urge co-operation between the dentist and the physician. Only a few states have a law calling for medical inspection of the school children and in fewer yet does the law make inspection compulsory. The usual history of a medical inspection law is that after some years of local agitation on the part of a few "cranks," a permissive law will be granted the people by a complaisant Legislature. This means that the law making body authorizes either the school boards or the health boards to appoint medical inspectors, under certain restrictions, if they so choose. Later, after much more agitation, the state gets compulsory medical inspection, under which law all children are required to be inspected by appointed physicians. Now, in my opinion, all laws permitting or compelling medical inspection, permit the appointive powers to appoint dental inspectors, if they wish to exert their powers to that extent. If they do so wish, and express that desire by action, the matter of dental inspectors is solved. If they do not so wish, the matter of dental inspection is delayed, until the people or the appointive power, usually a board of health, is further enlightened and educated. You will find numerous political problems entering into the question. Whether the board of health or the school board has the final decision in the matter, you will note, as I have had reason to do, that the fact that you have nothing to offer politically, constitutes a barrier to the appointment of dental inspectors. Eternal agitation and persistent publicity of conditions will generally correct this condition.

Even if you are unable to compass the desired end at the time, you can look forward to the next step, namely, a permissive dental inspection bill to be passed by the next Legislature. Success in that means that the school authorities or the board of health have permission to expend a certain amount of the funds gathered by the taxation of the people for this specific purpose. It is then up to the dental profession in their several communities in that state to convince the proper authorities that such an expenditure is not only legitimate but wise.

In my opinion, the school authorities will be more open to conviction in this connection than the boards of health and where new laws are sought, I would recommend that the school authorities be named as the appointive powers. However, if the physicians in the community can be brought to see the facts as I have set them forth, the health board is likely to follow the sentiment of the local medical organization. But it is a fact that today the educational authorities are more receptive to our plea than are the health boards. Politics is the answer.

After permissive dental inspection, compulsory dental inspection follows as a matter of course and is the next forward step in the campaign. But that achieved, what next? Inspection of the mouths of the children is but a step, and a very inconsequential one, materially, in the solving of the problem. Compulsory care of the children's mouths is the real goal. I hold that no parent has any more right to send his child to a school, public or private, to mingle with other children, with its mouth in an unhygienic condition, than I have to go into a school room with a mass of pathogenic germs and scatter them broadcast. So the eventual and correct outcome of this movement must, and of right will be, the compulsory care of the mouths of all children by the state.

I do not mean by that, that all children shall be cared for at the expense of the state, for that would be unreasonable, but I do mean that the state should and will be as responsible for the proper care of the mouths of the children as it now is for the cultivation of their minds. Whether the child is a pupil of the state, in the public schools, or not will have no bearing on the question. The great economic problem will prevail—shall our children grow up to be full-powered producers, or partial or non-producers.

When we reach this state, our oral hygiene problem will be solved and solved correctly, but not before then. We cannot solve it for the present generation of adults for many reasons. In the first place it is impossible to interest the masses of the people to the extent that they will demand dental attention. They know nothing and care less about becoming better producers. Economic problems like ours do not affect individuals to an appreciable degree, or at least the individual thinks they do not, hence no great interest is taken in them. When you talk to the average individual in all earnestness about the future economic aspect of the question, he wonders what your personal pecuniary interest may be in the problem and expects you to wind up with a recommendation of some tooth paste or brush you are selling. Again, I would say, I am talking of the masses. Of the occasional converts we gain among the adults, I have nothing but praise to offer, and I believe, as I have before stated, that one recruit now is worth a score hereafter, but the ultimate solution of the problem, the golden age of better mouth conditions, better use of the mouth, and the final great good of this whole movement, depends on our education of the coming generations.

It is remarkable, at least to me who have looked into the mouths of a great many children, how similar mouth conditions are among the children of the wealthy or well-to-do and the children of the poorer classes at the age of six, when most children are entering the public schools. At that age, barring the inevitable deviations in all generalizations, children are wondrously uniform in their mouth conditions. When the time comes that the children of those who can afford it are given the necessary attention by the family dentist and the others are given equally careful attention by the dentists for the state, from this age on, this portion of the great problem of how best to increase the efficiency of our producers and decrease the number of our non-producers, will have been solved.

When we can take charge of the mouths of all children at five or six years of age, either in private practice or school clinic, and can carry them on to fourteen or fifteen with commendable mouth conditions, a knowledge of mouth hygiene, and better than all, a knowledge of what to eat, how much of it to eat, and how to eat it, the human race in this country will have taken a long stride toward perfect efficiency.

And that is my solution of the oral hygiene problem. I would do what circumstance will permit in the education of the present adults. I do not belittle in the slightest the work that is being done and the results that are being achieved. It is a glorious work and the results are worth all the effort we are putting forth. But I would warn those who are hyper-optimistic that the final outcome is not a matter of weeks or months, or even a few years; that the ultimate greatest good is a matter of decades and that many of us now in the harness will have passed to the great beyond where prophylaxis is a living reality rather than an iridescent dream, before this much to be desired condition becomes universal. However, that should not be a matter for discouragement to us for all great problems consume years of time and the lives of scores of advocates, in their solution.

Any worker looking for immediate extensive results and so mentally small that he cannot contribute his mite for fear the end will not be achieved in time for his participation in the enjoyment of contemplating it, is unworthy a great movement and should be allowed to withdraw, unregreted, whenever his faint heartedness prompts it. But for those who love a great cause for its very greatness; who love humanity for its follies and errors; who have a broad interest in the sociologic and economic game of the greatest good for the greatest number in its widest sense and most pronounced expression, the oral hygiene movement offers one of the most attractive fields for work that one can imagine. The care of the mouths of the children of our nation cannot help but appeal to their reason, their hearts, their sympathies, and their love for economic efficiency.

PROFESSIONAL OPPORTUNITY.*

BY DR. H. F. HAGEMANN, ST. LOUIS, MO.

It has been said and perhaps correctly so, that opportunities of various kinds are constantly presenting themselves to us. If we were but ready to take advantage of each, as it comes up, and make the best of it, success would be ours at every turn. But success and how to attain it, is man's most difficult problem. It is the prize which he pursues from the cradle to the grave. In many cases he wins, while in others his efforts go down in dismal failure. Every ambitious and aspiring man very quickly realizes that there is no special formula for success; nor are there any set rules that he can master to attain it. He may study with deep interest the lives of successful men, and from them gather inspiration and encouragement, but at the best, the conclusions can only be suggestive. Success depends entirely upon the individual and the proper application of the qualifications with which he is endowed. It is absolutely useless to waste precious moments and hard-earned money in trying to be like someone else, unless you are similarly gifted. First of all, find the place in life for which you are best adapted, and under all circumstances, be your actual self — natural in the highest degree. When you become absolutely satisfied as to where you rightly belong, then cultivate the commendable traits of close application, unmistakable enthusiasm, indomitable perseverance, and keen observation. Of the latter element much may be said to the advantage of all, because no one can attain success unless he be thoroughly observant. There is an old adage composed simply of three words, that will emphasize the importance of this last trait to be cultivated, "To know, observe." The world is full of men, who have eyes but they see not. They stand face to face with brilliant opportunities, but are blind to them.

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*Read before the St. Louis Dental Society, June, 1911.

The choosing of one's life-work is a problem that presents itself early. It necessarily comes at a time when a man's experience is very limited and his judgment is immature, when his thoughts are likely to turn to visionary roads that lead to the fields of greatest gain with the least mental and physical exertion. To this important step, one should give the gravest consideration, weighing with an unprejudiced mind, the real qualifications and adaptability to the vocation in view and not be unduly influenced by trivial circumstances that may arise, or be blindly led by suggestions of those who have no personal interest and have therefore given the matter no thought commensurate with its importance. Evidence of one's inclinations toward the right calling in life usually manifest themselves during childhood days. These early inclinations should be studiously encouraged and intelligently guided by the parents. But there are periods in the life of every man (no matter how carefully he may have selected his vocation), when he will experience feelings of dissatisfaction and imagine another calling more to his liking and better adapted to his qualifications. This feeling of unrest, when actuated by unsatisfied ambition, is frequently the fundamental cause of material personal advancement. For such a man will usually throw off the spell of dissatisfaction and apply himself with renewed effort to his chosen work, thereby avoiding stagnation and living a fuller and more useful life.

The man who expects to accomplish anything of great importance in the world, must be prepared for the possible emergency. He must be large enough for the greatest opportunity that could come to him. In every phase of life, physical, mental and moral reserves are of incalculable value. Many men work so hard and long, that they exhaust their physical energies each day. They make it a matter of conscience to wade through just as much work as they possibly can every day, no matter how laborious or nerve-racking it may become, not realizing the tremendous importance of keeping oneself vigorous and buoyant. No man can be successful to any commendable degree unless he keep his faculties fresh and responsive by great mental and physical reserves. Hibernating animals, like the bear, in cold climates, sustain life through the winter wholly upon the reserve fat and nutriment stored up in the tissues, and patients who have a good constitution and splendid physical reserves are carried through severe cases of illness, by this surplus of stored up vital power; while those who lack it, often lose their lives, even in much less severe attacks. Great and successful men in the commercial world accomplish marvels with their reserves. Many of them work but a few hours each day, but they have such tremendous physical reserves and so much stored up mental energy, that they are able to accomplish wonders in a short time, because of their ability to work with great intensity and powerful concentration. There will come into the life of every man worth while, a time when to attain the desired end successfully, he will be compelled to call upon his reserve power. It is then a question of how long that stored up energy will enable him to hold out. There will often arise opportunities when his success will depend upon how much fight there is in him and he must always remember that he cannot take out of his life what he has not put into it, any more than he can draw out of a bank what he has not at some time deposited.

We who have chosen dentistry as our profession may grieve and lament at the real or apparent lack of relative dignity of our calling, at the real or fancied superiority of our sister profession, but there is no profession which is one mite greater than the men who compose it. So if the relative inferiority is real, we have no one to blame but ourselves. A community is made up of an aggregation of individuals and that which is true of the individual citizen of that section, is reflected by the section as a whole. If the people are progressive, wide awake and intelligent, then the community will stand with those in the front ranks of civilization. If, on the other hand, its people are not industrious and care nothing for advancement, then the community will remain a back number in the progress of the times. I don't want to be looked upon as a pessimist, but I do want to bring out the fact that it is up to us to make dentistry what we would like it to be.

Emerson says, "The power which resides in every man is new in nature, and none but he knows what that is, which he can do, nor does he, until he has tried." No man achieves anything worthy until he learns the power of conviction. The world stands aside for the man who has a set program, a mission, a calling to do that which he feels a throbbing compulsion within him to do. Stoutly affirm your ability to do what you undertake, then do it, so that it is above criticism. One of the best means of strengthening character and developing stamina generaaly, is to assume the part you wish to play and carry it to a successful termination regardless of obstacles. If you are deficient in staying power, pluck or determination, learn to assert vigorously these qualities, as your own by divine right. Convince yourself thoroughly that these qualities belong to you and you will have developed your position and increased your opportunities wonderfully. Integrity and industry are the best possessions which any man can have, and anyone can have them if he will. They are indispensable to success and are the only keys to open with certainty the door of opportunity to the struggling young professional man. The positive man is wanted everywhere, the man with the qualities of leadership. He is fearless and courageous. His conviction is born of the consciousness of strength. Never allow yourself to admit that you are inferior to the emergency confronting you, for this is to invite defeat. I again quote Emerson for his excellent advice along these lines. He says, "A man should learn to detect and watch that gleam of light which flashes across his mind from within, more than the lustre of the firmament of bards and sages. Yet he dismisses without notice his thought because it is his. In every work of genius we recognize our own rejected thoughts, they come back to us with a certain alienated majesty. Great works of art have no more affecting lesson for us than this. They teach us to abide by our spontaneous impression with good humored inflexibility, then most when the whole cry of voices is on the other side. Else tomorrow, a stranger will say with masterly good sense, precisely what we have thought and felt all the time and we shall be forced to take, with shame, our own opinion from another."

What is so eloquently expressed in this quotation is exactly what has happened and is happening in the dental profession in St. Louis. We have excellent men right in our midst; men who are fully qualified to be leaders in the dental world, men with wonderful mental and physical reserves who are masters in their chosen work. But they have been too retiring or too modest to assert themselves. On the other hand, there are some of us over whom yesterday tyrannizes. That is to say, we shrink from doing today, anything that differs in the least from what we did yesterday. If we would escape from the tyranny of yesterday, we must keep the doors and windows of our minds open to the freshening air and sunlight of the new day. In a darkened room, one day is like another, and the noontide is not different from the night. St. Louis has given many great men to the profession who have scattered sunlight wherever they have gone, but we at home have seemingly been satisfied to have the stranger say with masterly good sense, precisely what we have thought and felt all the time. I feel confident, however, that the profession in St. Louis is rapidly getting away from this unnatural state of timidity, we are developing men who have the power of their conviction, men who will place St. Louis in the front ranks of professional progressiveness.

The opportunities in the dental profession in general are many and could not be mentioned in detail without making this paper too lengthy. But there are a few points to which I wish to draw especial attention. Dentistry, as you know, is one of the youngest of the professions. It is in its childhood days, and can be likened unto the growing youth. It has made great strides and has developed wonderfully in the past few years, but like the youth, it needs broadening out. Our vision has been too narrow, our field of work too limited. We have been busy trying to remedy the evils brought about by dental caries, busy with constructive work or reconstructive work as it might be called, the gold and porcelain inlays, the crowns and bridges, and the artificial dentures, but we have until recently given but little thought to preventive dentistry. Medical science is constantly trying to determine methods of treatment to prevent the various pathological disturbances. The great medical research laboratories are diligently working to find the fundamental cause of the many diseases to which flesh is heir, and when the cause is discovered, a method of treatment is instituted to prevent that certain disease as far as possible.

We, as dentists, deal primarily with dental caries and its sequences. This breaking down of the tooth structure is the most prevalent of all human disturbances. Our positive knowledge regarding this disease is still very limited. We know that caries of the teeth is a germ disorder, dependent upon the activities of a specific type of bacterial organism, we know that lactic acid is the solvent of the lime salts of the tooth structure; we know that the ravages of decay are much more extensive in some mouths than in others, etc. But we are not positive why, under apparently similar conditions, some teeth decay and others do not; we do not know positively what part the saliva or its ingredients play in the inhibition or propagation of decay; we do not know with any degree of certainty what effect constitutional conditions have upon this disease. There are many other phases of this subject which are still cloudy and afford a great opportunity for study and research. The profession is at the present time riding on the crest of the wave of enthusiasm in this oral hygiene movement. This great work, if properly conducted, affords a wonderful opportunity for the general elevation of our profession in the eyes of the world. The closer affiliation of the dentist with the rhinologist, the stomatologist and the oral surgeon would be of inestimable value to the profession, for by a more intimate relationship we would necessarily broaden our knowledge and widen our field of usefulness. All this means work and study on our part; but nothing worth while is ever accomplished without labor. So if we would raise the standard of the dental profession, we have an opportunity for good hard conscientious work, for as I stated earlier in my paper, it is up to the men in the profession to make the profession what they would like it to be.

Great statesmen know more than the laws of their country; great generals know more than war, so great dentists should know more than dentistry.

THE STUDY OF THE MICROORGANISMS OF THE HUMAN MOUTH.*

BY DR. THEO. VON BEUST (DRESDEN).

If a small quantity of the deposit found upon an uncleansed surface of the enamel be brought under the microscope it will be found to consist largely, if not exclusively, of living microorganisms.

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*Read before the American Dental Society of Europe, 1911.

Upon closer examination of this material one will see, in addition to all the morphological forms commonly known to the science of bacteriology, others representing comparatively rare types, which have heretofore never been known to occur outside of the buccal cavity.

Since the introduction of the methods of cultivation now employed, it has become evident, that a number, we can say a large fraction of these varieties, fail to respond to any attempts made to secure their growth upon artificial media. It follows therefore that a differentiation between two categories of organisms can be made. On the one hand can be placed those cultivatable forms, the chemical, biological and morphological characteristics of which are no longer an unknown chapter; on the other hand, that class represented by the uncultivatable contingent, of which is known comparatively little morphologically and far less chemically, biologically and phylogenetically. To these one could add, in parenthesis, a third class,—for instance, such as are both uncultivatable and invisible, instances of which are known. With the last class, however, we may very well dispense as having no known relation to our subject.

Today there exists a voluminous amount of literature pertaining to the representatives of microscopic life under discussion and so great is the accumulation of theories and facts, that it seems desirable to confine our remarks to a branch of this department of microscopy which appears to be the most important and opportune; i. e. the study of the uncultivatable microorganisms of the human mouth.

Returning to emphasize the fact that a large number of the forms found in the mouth cannot be grown artificially, it will become apparent to close observers that scientists have proceeded illogically in accepting certain deductions derived from the results of culture experiments. For instance, if experiments aiming to effect the isolation of the specific organism of pyorrhea by culture should show in 100% of inoculated plates a given organism, would it be justifiable to accept this organism as being etiologically connected with this disease? If inoculations from 100 root-canals, which have been treated by the best methods known to dental science be made and no growth secured, could these canals be pronounced sterile? And furthermore; if a certain organism be isolated from the depths of a carious cavity in each of a hundred experiments, could this be declared to be the specific organism of decay? Why, to answer these questions affirmatively would be equivalent to neglecting consideration of the uncultivatable organisms, which the student of the morphology of the forms found in tooth slime must recognize as being a thousandfold in points of number in excess of all cultivatable forms commonly contributing to the formation of this deposit. These observations are by no means intended to create the impression that culture experiments are of little value, they shall, however, convey the idea that culture experiments are of questionable value, just so long as the uncultivatable forms are given no attention, as has usually been the case.

Leber & Rottenstein[1], who antedated W. D. Miller by about fifteen years, in their most instructive treatise on caries of the teeth, a contribution which will compare favorably with any later publication of its kind, claim that the thread-forming organisms, which belong to the class under consideration,—that is to say, the uncultivatable microorganisms, were mainly concerned in the destruction of the teeth. Placques, consisting largely of these forms, were supposed by Ficinus and Klencke[2] and later by Black, to be essential for the inauguration of the first stage of decay. Continued experiments have induced me to believe, that the soft deposits covering the necks of teeth, which after days or weeks have become calcified, thereby forming dental tartar, consist mainly of these microorganisms. The most desperate cases of non-specific inflammation of the oral mucous membrane are attended with such an enormous increase in their numbers, that we can safely without erring, regard them as the agents producing the symptoms. I have taken living masses composed of them as large as a pea from the very depths of pyorrhea pockets. I have removed accumulations of their colonies by the tablespoonful from the enamel and interdental spaces in mercurial stomatitis. I have found them in great masses clinging to inflamed tonsils; why, so frequent are large quantities of living deposit met with, even in the case of patients entirely unsuspicious of its presence that the toxic assimilatory products created, must certainly be accepted as factors exaggerating prevailing maladies, if indeed it cannot in many instances be regarded as being the sole cause of profound disturbances.

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[1] Leber und Rottenstein: Caries der Zahne. Berlin, 1867.

[2] Ibidem, p. 16.

Have not reasons sufficient to make a careful study of these organisms desirable been advanced? You will doubtless now perceive what circumstances have prompted me to pronounce these investigations to be the most important department of microbiology for the stomatologist today. The dental, as well as the medical profession should be severely censured for paying so little attention to this matter. The demand for investigators capable of raising this branch to conform with the status of advancing science is urgent. And it should not be omitted, this work being virtually in its infancy, to advise those intending to institute experiments in this direction, to take it up on independent lines. With due deference to the men who made our profession, it is well to deter from accepting all the assertions of former authors as true. This practice is indulged in so injudiciously, that it must necessarily, as being derogatory to progress, be condemned publicly. Therefore, do not accept, but attempt to verify or disprove statements which seem sufficiently important.

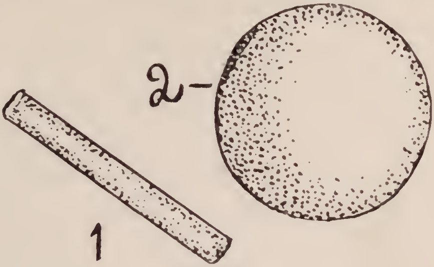
Having thus far endeavored to impress upon you that this study has evoluted from a neglected question of purely scientific interest to one of positive necessity, it behooves us to seek a way in which to initiate those who are not familiar with our subject into the problems awaiting solution. In so doing, a word which has incited endless controversy immediately suggests itself. Reference is here made to the term "pleomorphism." The assertion that the micro organisms of the mouth are pleomorphic has been combatted as often as expressed. It is not, however, its definition, but its interpretation, which demands attention.

Pleomorphism may be said to signify the faculty possessed by certain organisms of generating offspring morphologically unlike themselves, which in their turn are endowed with the faculty of reproducing organisms resembling either themselves or the parent from which they were derived.

As illustrative of this definition your attention is called to the following slides:

The first slide (Fig. 1) shows a bacterium of the bacillus type. Figure 2, a bacterium of the coccus type. Supposing these two organisms to be true representatives of the Family Bacteria, we would assert a true pleomorphism were we to declare that organisms of the first type could, under certain conditions, propagate themselves as organisms of the second type, which in their turn could again produce offspring resembling the first type.

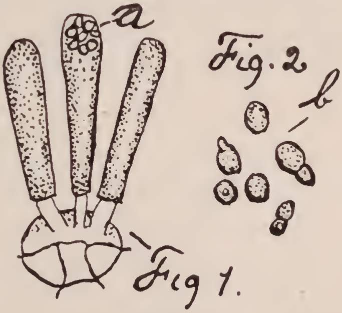
This is a real pleomorphism, as propounded by Naegeli.



Slide 1.

For our purpose today we may divide pleomorphism into three grades. In the first grade we may place those cases where the parent gives rise to offspring resembling types which have never been proven to exist as developmental phases of other organisms. This would apply to the example just explained. A pleomorphism of this kind has never been conclusively shown to exist.

In the second grade we may place those cases where the offspring resembles forms which have been known to exist as developmental phases of other organisms. The offspring of this grade is capable of propagating beings resembling itself morphologically. This is a very common mode of reproduction.



Slide 2.

Slide 2 demonstrates a pleomorphism in this sense. We have here a diagramatic representation of a fungus which attacks plum tree (exoascus pruni).[4] Vegetating in the tissues of its host with a mycele common to many of this class of organisms, it at times breaks through the layers of cells of the epidermis, in order to distribute endogenous cells or spores, as are shown at a, Fig. 1. Should perchance any of these spores come in contact with the fruit or a leaf of the tree upon which it fructifies, it would give rise to a mycelium which would direct its course into the interior of the organ and grow to a plant which in all respects resembles its parent; if, however, the spore happens into a nutritious fluid substratum, or if it were subjected to certain climatic influences, it would multiply by budding in the manner adopted by yeast cells, as seen in Fig. 2, until such a time when conditions for its growth into a plant resembling the parent from which the original spore was derived, would present itself.

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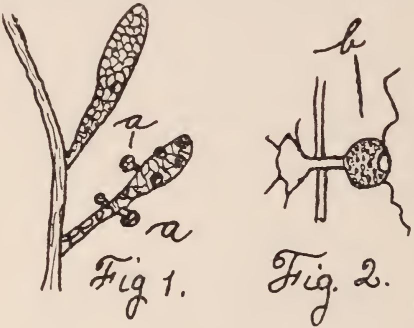
[4] Die naturlichen Pflanzenfamilien, von Engler u. Prantl, I. Teil, 1 Abteilung.

In the third grade we may place those cases where the parent gives birth to offspring which cannot produce beings resembling itself morphologically. This form we could call simply "spore formation." It is necessary to consider it as a form of pleomorphism here, however, as it has so often been confounded with the term.



Slide 3.

(Slide 3.) Here we have an example of this kind.

We have here a drawing of a microscopic aquatic fungus (dictyuchus monosporus)[5] which, in its mature state, produces on its stem organs or sporangia, two of which are seen projecting from the stalk in Fig. 1, the upper one being filled with reproductive cells or spores. When these spores or gonidea have ripened, they are seen to protrude, as is seen at a, in the lower, already partially emptied sporangium, to unfold arms or cilia, as is seen in Fig. 2, which represents a spore more highly magnified, and to separate themselves from the parent. These spores are capable of independent voluntary movement, are endowed with the faculty of avoiding other microorganisms which are moving about in the same media and have the power to seek and attach themselves to objects in places favorable for their development into plants resembling their parent. These spores, however, are not capable of reproducing a generation of spores, as was the case in the foregoing instance, so that the term pleomorphism can only be applied in a restricted sense.

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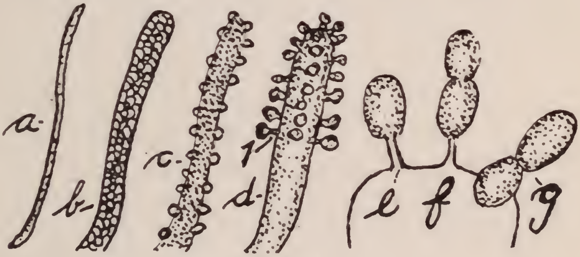
[5] Ibidem.

It now remains to consider whether a pleomorphism, in any of these interpretations, may be attributed to the uncultivatable microorganisms of the mouth, or whether a comparison with any of these fructification forms would appear feasible. We must first satisfy ourselves, as nearly as possible, whether we are here dealing with bacteria or with quite another class of organisms. As the manner of reproduction of the lower organisms is largely utilized to determine their classification, it will be necessary to direct our attention to those modes of reproduction which the microscope has led some to regard as the probable ones for the mouth organisms. We will select as an illustration of the supposed fructification of a very common mouth inhabitant the crude diagram on slide 4.



Slide 4.

Figure a is supposed to be a thread form, such as is commonly found in the mouth. Figure b, a highly magnified section of same in the interior of which spores have developed. Figure c shows us some of these spores protruding from the thread. If we draw an analogy between this and the fructification of certain other organisms, we might (although by no means necessarily) await a stage of development in which the spore, or we might add, a spore forming organ, is found attached to its parent by means of a thin process. or basidium, or peduncle, as it is often termed. This is seen at d 1. As a matter of fact, this peduncle is barely distinguishable under favorable conditions. Figure e shows us a section more highly magnified. The spores and their attachment are clearly perceptible. Another peculiarity is here demonstrated. It will be seen that the spores at f and g are double. This is frequently seen in cover-glass preparations. In commenting upon this, Williams says that either the mature spore multiplies by fission after its exit, as seen at f, or that a secondary spore is formed endogen and is pushed out with or follows the primary spore, both explanations seeming plausible.

We would now be in the best position to inaugurate a system of classification were not this representation subject to quite another version. About forty years ago Leber and Rottenstein, describing these organisms, said that frequently thread forms are met with which are partially covered with the cocci forms common to the mouth and furthermore that sometimes one found threads upon which a whole enveloping mantel of cocci had accummulated. To use their own words, "Man findet unter dem Mikroskop Fäden, an welche sich erst einige wenige Kornchen angelagert haben, an anderen Stellen solche, welche bereits mit einer Art Mantel von Körnchen umgeben sind, etc."[5] The student will at once perceive by these remarks that the form known as Leptothrix racemosa Vincentini,[6] which has now been more fully described by Vincentini, Williams[7] and myself, has not escaped the notice of these men. As a matter of fact, Leber and Rottenstein never entertained the idea that the thread forms were instrumental in producing the micro-organisms with which they were enveloped. They regarded the cocci as having accidentally settled thereupon, or possibly as epiphytes. It was not long, however, before other observers, who were making a special study of this deposit, surmised in these threads, organisms thus occupied by cocci of a complex type. This diversity of opinion has become to be the source of bitter controversy. Whether the spores have been formed by the thread, or whether the spores are bacteria which have accidentally or otherwise come in contact with the thread—this, gentlemen, is a question which is left for you who are to take this matter up to decide. Eminent men today believe that the mouth organisms under consideration are bacteria and adopt the most primitive mode of reproduction known, that of fission, whereas others (and with the latter—the smaller faction—I have affiliated myself) contend that we are here dealing with organisms of a more complex order. Our views concerning the pleomorphism of these organisms must consequently be determined by the construction which we apply to the picture seen under the microscope.

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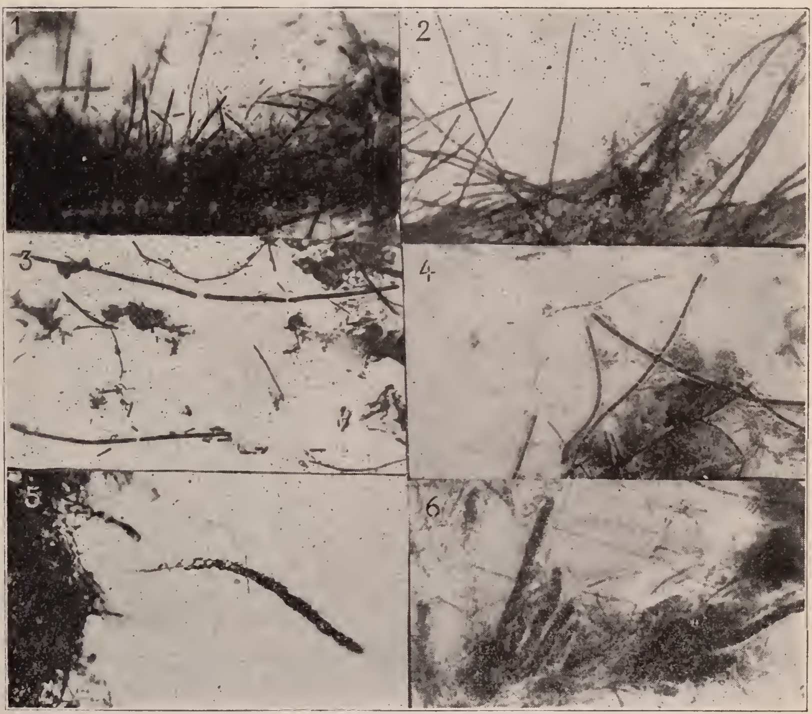
[5] Ibidem, p. 18.

[6] Vincentini; Bacteria of Sputa and Cryptogamic Flora of Mouth.

[7] Williams; *Dental Cosmas,* 1889, p. 217.

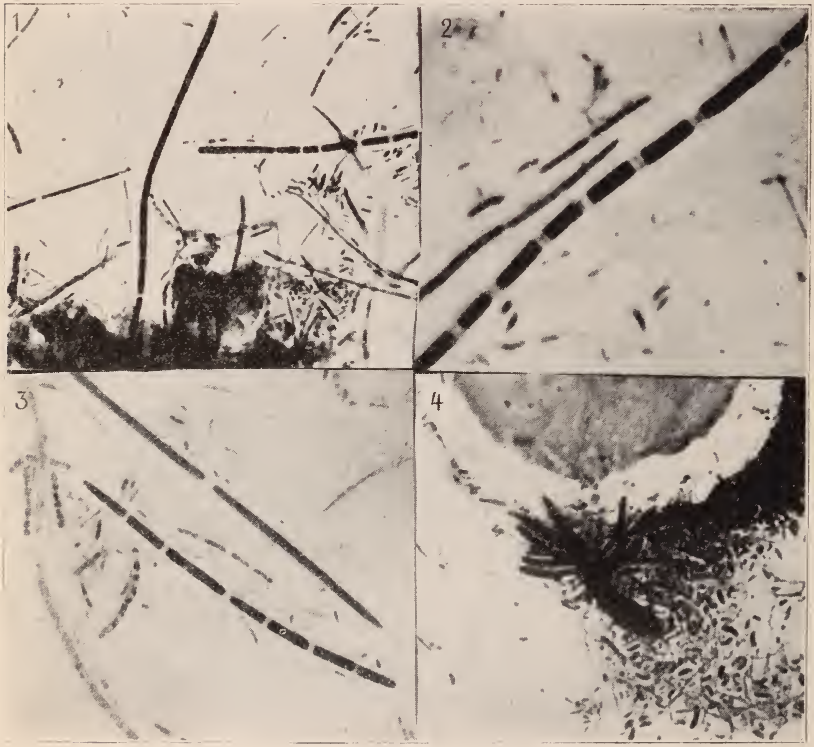
The following plates, which were taken with the microphotographic apparatus of the Verein in Amerika dipl. Doktoren der Zahnheilkunde, which has kindly been placed at my disposal, are intended to serve as an introduction to the cover-glass specimens which I here have on exhibition.



Figs. 1, 3, 4, 6.—Hämatoxylin stain. Fig. 2.—Gram stain.
Fig. 5.—Ferrum sesquischlor-atum-gallein stain.

A great deal of importance has been attached to the demonstration of the peduncles connecting the spore with the parent stalk.

Naturally, positive proof of their existence would be interesting and valuable, but to doubt their presence merely because some are not satisfied that they have been discerned, would be inconsistent with what we might expect from specimens which have been subjected to the procedures necessary to extract the stain in order to make these organisms visible. If we utilize methods which bring out delicate structures clearly, for instance cilia, we usually impregnate the slimy envelope surrounding them to such a degree that the organisms themselves are altogether indistinguishable.



Figs. 1, 2, 3,—Hämatoxylin-Heidenhain stain.
Fig. 4.—Böhmers Hämatoxylin stain.

It would encroach too much upon our time to enter upon the subject of the peduncles today. This should be made the subject of a special paper. The peduncles do exist, however, and are demonstrable. I can make this assertion without reserve.

A good method of staining the leptothrix racemosa will be found in my article on the "Demonstration of Septa in the Leptothrix Filaments of the Mouth" in the 1909 *Items of Interest.*[8]

We now come to a form which was made the subject of a paper written by me for the *Dental Cosmos,*[9] in which the photograph now on the screen was also published. This organism, for which I have suggested the name leptothrix falciformis, has been further commented upon in my paper before the International Dental Congress, Berlin, 1909,[10] and also in a contribution to the Berliner Klinische Wochenschrift.[11] After careful study of all the old literature concerning the mouth organisms which I have been able to obtain, it appears to me that this organism is nothing more than a form of the so-called "matrix," now made visible by advanced methods of preparation, out of which different mouth organisms were formerly supposed to grow. It is exceedingly difficult to decolorize or render transparent the slime and debris with which these organisms are usually surrounded, so that attempts at staining

6.—Print shown central portion. 7.—Print showing margin.

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[8] von Beust; *Items of Interest,* Vol. XXXI, No. 2, 1909.

[9] von Beust; *Dental Cosmos,* Vol. L, No. 6, 1908.

[10] von Beust; Die Leptothricheen des Zahnbelages. (Eine Kritik der Millerschen Einteiling der Mikro organismen der Mund Hohle. V. International Dental Congress, Berlin. See proceedings of Congress, or Archiv. fur Zahnheilkunde, No. 10, 1909.

[11] von Beust; Berliner klin. Wochenschrift, 1909, No. 46.

are uncertain and vexatious. A method which in many cases gives excellent results will be added to the appendix, when this paper is printed. Plate 3.

This leptothrix is to me the most interesting and, in a pathological sense, one of the most important representatives of the microbian flora of the mouth. You will note by the picture on the lower right side that the central thread is completely covered by sickle or scythe-shaped spores, whereas the leptothrix racemosa has round or oval spores. As the best specimens of these organisms are so densely occupied with the spores, and moreover, it being impossible to get the whole object in one focus-level, it is extremely difficult to secure anything approaching a satisfactory photograph of them. The stem, on this account, is not here clearly visible. The stems of such specimens possessing few spores, however, when seen under the microscope, lack nothing desirable in this respect.

If the dental profession takes pride in claiming a place beside medicine, one of its first duties should be to encourage more general scientific investigation of the organisms to which dentistry owes, in a great measure, its very existence.

Had it not been possible to secure, through proper staining, a series of specimens which to an impartial observer will allow of only one interpretation, it would be absurd for me to revive a theory which has been rejected by the overwhelming majority of bacteriologists. So confident am I of the soundness of the views of Williams and Vincentini (as far as a pleomorphism in a limited sense is concerned), which substantially coincide with mine, that I have little hesitancy in declaring that those who cannot come to the same conclusions, deliberately desist from making their examinations in accordance with the methods recommended.

In the selection of the specimens for my exhibit here, I endeavored to confine myself to such preparations of leptothrix racemosa as would best demonstrate their habitus; and to such specimens of leptothrix falciformis as would best show the arrangements of the spores.

I challenge anyone to produce images obtained by cultivating threads together with cocci, or threads together with fusiform bacteria, which bear a shadow of a resemblance to leptothrix racemosa or to leptothrix falciformis, both of which, especially the former, occur in untold numbers in every mouth afflicted with large quantities of deposit. I contend that no one will succeed in doing this. Perhaps some bacteriologist will tell me by what manner bacteria are supposed to attach themselves to the threads. Do they possess claws?

It would be interesting to have the microscopists of the society express their unreserved opinions regarding the specimens exhibited stating whether the whole arrangement and relation of the spores to the thread do not dictate that we are not here dealing with accidental accumulations, but with highly organized individuals.

In closing I desire to impress upon you that no future treatise upon the microorganisms of the mouth can be complete without giving the organisms included under our subject *first* consideration. A critical revision of their classification should be undertaken, for until this is done and until it becomes a generally recognized fact that the bulk of the living elements in tooth slime is connected genetically, progress in this field will cease.

A STAIN FOR LEPTOTHRIX FALCIFORMIS.*

1. Collect the materia in a watch glass containing water colored a faint yellow by adding a few drops of the fixing fluid.
2. Spread the deposit on cover-glass carefully. Tease apart with two pins. Do not rub or crush. Allow to dry at temperature of room.
3. Fix in a solution of iodide of potash, 5 grammes, iodine 2 grammes, water 200 ccm. 24 hours.
4. Wash in several changes of strong alcohol 24 hours.
5. Stain in a hot solution of Fuchine 6 grammes carbolic acid 6 ccm. alcohol 50 ccm. and water 200 ccm. for 15 minutes or more. Replace water lost by evaporation during the staining by adding dilute alcohol. (This is to prevent strong deposits upon the cover-glass.)
6. Transfer quickly (expose the specimen to the air as little as possible) to a dish containing water made alkaline by adding bicarbonate of soda.
7. Transfer to aqueous solution of sulphuric acid for a few seconds.
8. Transfer back to alkaline water—if the specimen now appears clear upon examination with a weak power, it is ready for the next step; otherwise repeat the process of differentiation.
9. Dry and invest in Canada balsam or in Hoyers fluid for analine stains.

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*Specimens of Leptothrix falciformis are most frequently found at or under loose gingival margins in deposit bathed by the serumnal discharge from the gums. They are always associated with Spirochaeta. Naturally the most of them are destroyed during the process of preparation.

THE RELATION OF THE TEMPORARY TEETH TO THE PERMANENT TEETH.*

BY E. A. BOGUE, D. D. S., M. D., NEW YORK.

As the regulation of the temporary teeth of children is the most important feature in modern orthodontia, the relation of the temporary teeth to the permanent teeth becomes of considerable interest.

The great need for regulation of the teeth, arises from the intimate relations that exist between irregular teeth and the whole category of children's diseases.

For it is a fact, that when marked irregularities of the dental arches are found, especially what is known as the high arch, there is also found curvature of the nasal septum, nasal stenosis and almost invariably irregularity in the spinal column, which carries with it, irregularities of the ribs of the breast bone, and usually of the shoulder blades.

It is asserted by Dr. Douglas N. Stewart, a gynecologist of New York, that if it were his to state how to stamp out tuberculosis he would put every child between four and eight years of age, under the direct supervision of a physician and dentist, carefully trained in this matter. For if the roof of the mouth and the floor of the nose were made exactly normal, there would be a tremendous improvement in the physical condition in the whole number of children so cared for; and this applies especially to the decrease in deaths from diphtheria and kindred infections as well as to the deaths from mere pulmonary troubles, and those caused by a deficient supply of oxygen to the blood.

Dr. Stewart further says that "a human body with a high palatal arch may be compared to a beautiful locomotive with a small firebox and poor draft, both oxidation and nutrition are so diminished."

Nature cannot, unaided, spread contracted dental arches and almost all irregularities mean contraction somewhere, even if there be protrusion of the front teeth.

Let us first consider the positions of the permanent teeth in relation to the arches of the temporary teeth.

What I call attention to is certainly not new, but it is an anatomical fact that the crowns of the permanent front teeth lie behind and within the arch formed by the roots of the temporary teeth.

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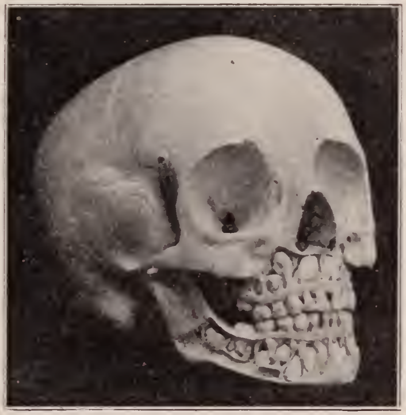
*Read before the American Dental Society of Europe.

The crowns of the upper central incisors lie, either just in front of the lateral incisors, lapping over them a little, and if compelled to erupt in that position they would be prognathous; or, they lie a little behind the laterals, which would make them retruding if they erupt in that position. In either case, unless the temporary teeth spread apart at about four years of age, and continue to spread until the spaces between the six temporary front teeth, plus the width of those six teeth nearly or quite equals the widths of the permanent teeth that are to come there, there is bound to be the same irregularity in the erupting permanent teeth that existed when these permanent crowns were packed into the narrow space behind the roots of the six temporary front teeth.



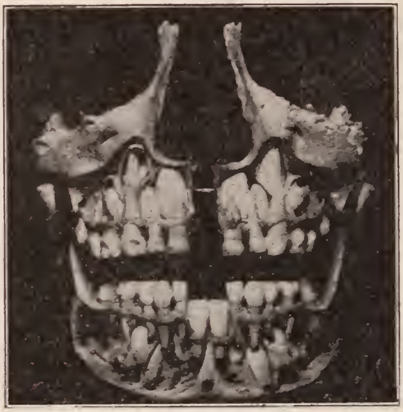
No. 1.

Skull of child 6½ years old, showing positions of permanent incisor crowns, behind, and within the arch of, the temporary incisor roots.

These crowns occupy positions of irregularity, and unless the teeth in the temporary arches spread apart, and their roots become absorbed, these permanent crowns must erupt in the irregular positions that they have occupied during development.

The lower permanent front teeth are as closely packed as the upper ones, but their positions tend to cause them to be rotated on their own axis as well as lapped over each other, and this condition is more difficult to treat than that of the upper teeth.

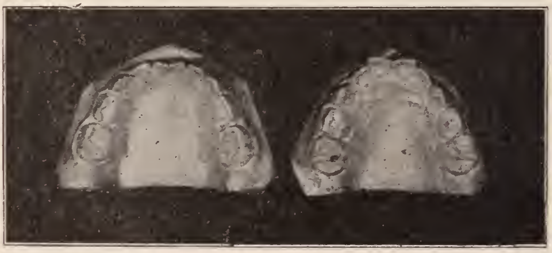
The crowns of the bicuspid teeth lie exactly within the embrace of the roots of the temporary molars, and the first permanent or principal molar which appears at about six years of age generally erupts immediately behind and closely in contact with the second or last temporary molar, which holds within its roots the crowns of the bicuspids.



No. 2. Kindness of Dr. Noyes.

Dr. Noyes' mounted skull shows the relative difference in width of the temporary and permanent central incisors.

Now, if there is not vigor enough in the child to spread the front teeth apart, so as to allow room for these larger permanent teeth to erupt properly, the whole arch will remain so narrow as to produce irregularity in the development of the permanent teeth and of the nasal passages also. The arch must therefore be spread as above stated, and this spreading, if done at from four to six years

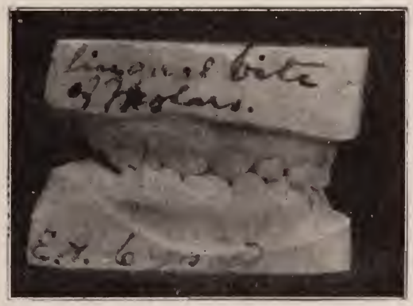


No. 3.

Malocclusion and torsion of deciduous teeth. Patient four years old. Dr. Mitchell's case.

of age, will also enlarge the nasal passages enough for breathing to be done through the natural channels and not through the mouth, closing the mouth to the microbes of contagious diseases and forcing them to pass through the filter of the nose—instead of directly into the lung.

It seems unfortunate that during the period designed by nature for the shedding of the temporary teeth and their replacement by the permanent ones, viz.—from six to twelve years of age—so large a proportion of the regulating that is required should have to be undertaken. This regulating ought to be done before the sixth year.



No. 4.

The first period of rapid growth in the child is from birth to the sixth year; then is the time for preventive measures.

Then follows a period of change, during which time all interference with the permanent teeth is likely to be detrimental, as the roots are in a formative stage.

The next rapid period of growth does not occur until about the 13th year and by this time the roots of the permanent teeth, being almost fully formed, the difficulty of moving them has become many times greater than during the first period of growth.

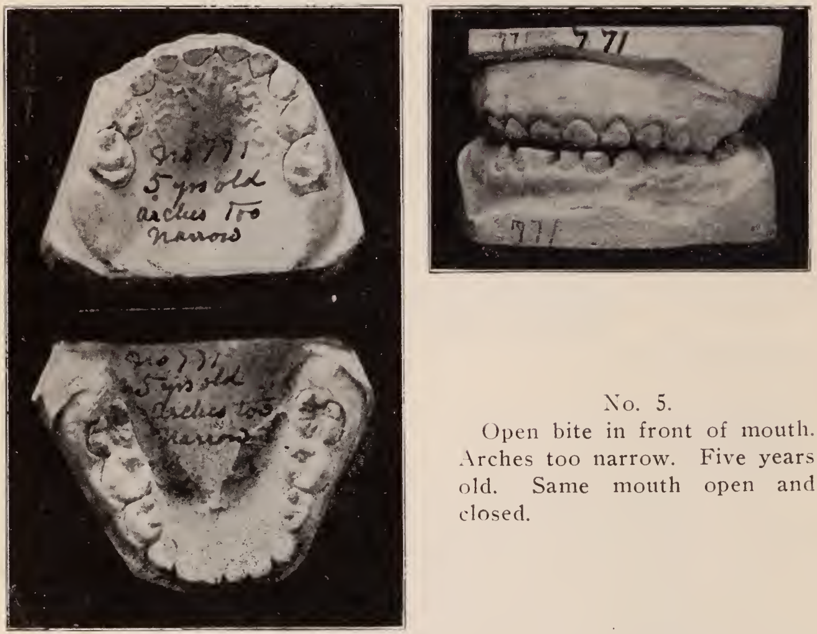
In urging the necessity for an early recognition of the conditions requiring orthodontia, I must also urge the necessity for the orthodontist having it in his power to control the time of the little patient.

As the work he is endeavoring to do has a most important bearing upon the child's entire future, all other engagements should, for the time being, be considered of minor importance, and the child should be subject at all times in case of need to the call of the orthodontist.

Let us consider next the sizes of the temporary front teeth as compared with the permanent teeth that are to follow.

I have carefully measured the upper central incisors on the models of temporary teeth of fifteen children.

I have also measured the permanent incisors of the models of the permanent teeth of these same fifteen persons after the permanent teeth had reached such a point in development that the central incisors could be measured. I have about as many more cases that have not been measured. Dr. Tousey has taken X-ray pictures of quite a number of cases. I show three of his slides and append a careful table of measurements made by him.



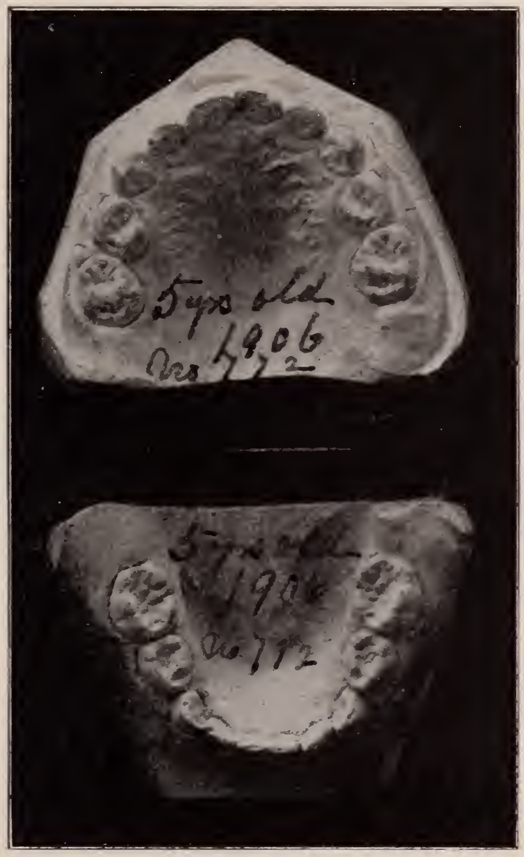
No. 5.

Open bite in front of mouth. Arches too narrow. Five years old. Same mouth open and closed.

The width of those temporary upper central incisors varied from 18/100 of an inch to 29/100, and the widths of the permanent upper central incisors of these same persons varied from 30/100 to 38/100 of an inch.

The average of all these measurements is 26/100 for upper temporary central incisors and 34/100 for the upper permanent central incisors, making an average radius of the smaller circle of the Bonwill or Hawley arch around which the six front upper teeth should be grouped, 76/100 of an inch for these temporary teeth, and 92/100 for the permanent teeth of the same fifteen persons.

If, therefore, we plan to form the wire arches, which we shall want to use around a circle whose radius is 16/100 of an inch

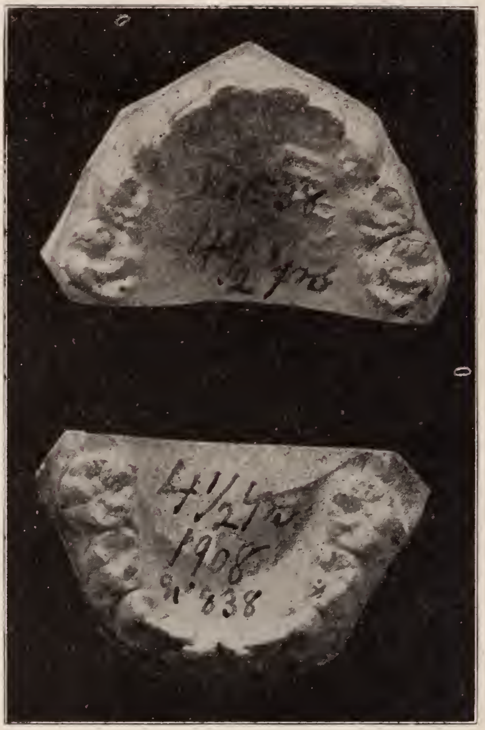


No. 6.

Miss L. Five years old. Arches too narrow. Incisors not spread apart. Lower cuspids and lateral incisors irregularly placed.

longer than the radius which would be determined by measuring the central temporary incisors, doubling that and adding 24/100 of an inch, which is an arbitrary figure procured by averaging the measurement of about six hundred specimens, we shall be sure of gaining room enough for the permanent teeth to erupt and for us to see what we are about, as they make their appearance through the gum.

While the arches of the temporary teeth generally need spreading, they need but very little, as a rule, to bring them to the normal size; and that normal size corresponds almost exactly to the normal size of the arches of the same number of permanent teeth in the same individual at the time of eruption.



No. 7.

Four and one-half years old. Both upper and lower incisors out of alignment and both arches too narrow, especially in front.

Further, the exact locality that generally needs spreading comprises the temporary molars and sometimes the cuspids.

If these are in their proper positions, the permanent molars will generally appear where they ought to be, and the bicuspids, which lie exactly beneath these temporary molars, will, of course, erupt in their proper position.

A short way to determine the dimensions of the upper arch toward which one would wish to draw an irregular permanent set of teeth is this: with accurate callipers get the width of the broadest part of the permanent upper central incisor, double that, and add 24/100 of an inch and you have the radius of the small circle around which the six front teeth should be grouped; add 50 per cent to that radius and you have the distance from the mesial face of the principal molar to the line between the central incisors. For example, the central incisor is 34/100; double that and you have 68/100; add 24/100 to that and you have 92/100 as the radius of your small circle; add one-half to that and you have 1 38/100 of an inch, which is the distance between the anterior surface of the principal molar and the mesial line between the two upper central incisors.

No. 8. Kindness of Dr. Mitchell.
A. P., three years old. Deciduous supernumary tooth and irregularities above and below.

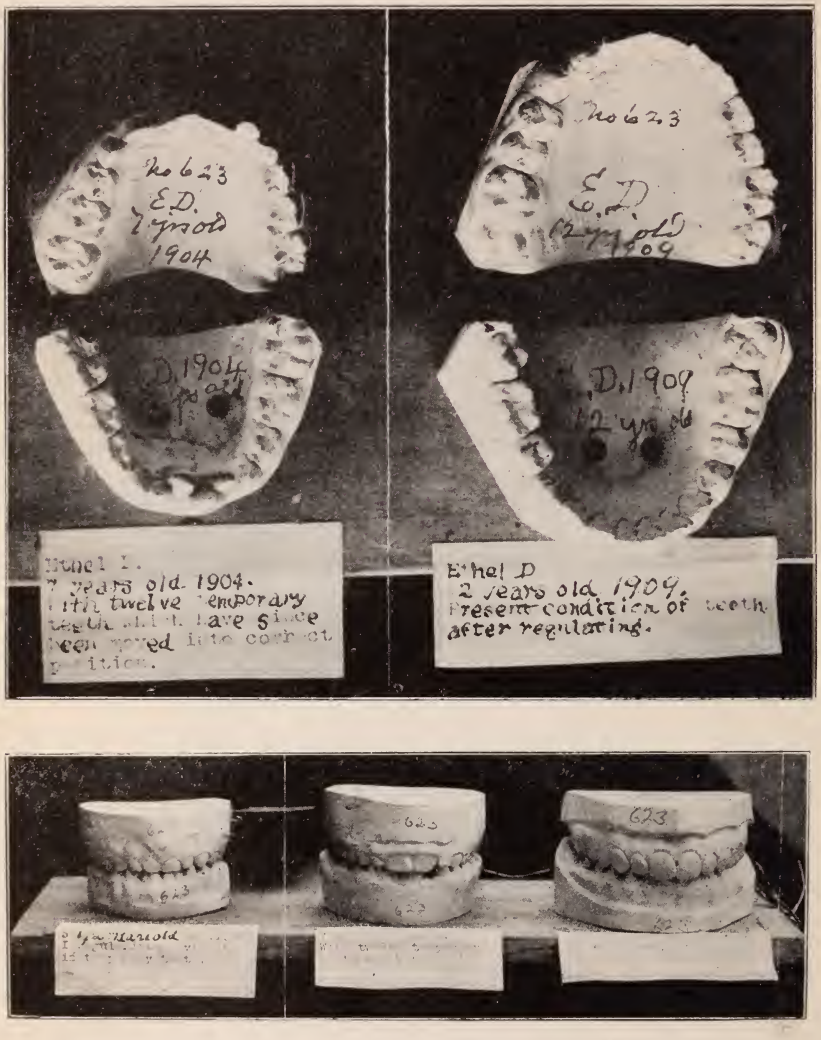
The relation of the incoming permanent teeth to the disappearing arch of temporary teeth is pretty nearly this.

The four permanent incisors should normally form an arch from cuspid to cuspid just outside the line formerly occupied by the cutting edges of the temporary incisors.

The permanent cuspids, when they appear, should erupt about where the temporary cuspids stood, only a little outside the line of the temporary arch, and the bicuspids should be found exactly beneath the temporary molars.

This leaves the ten forward permanent teeth. when normally arranged, occupying almost exactly the positions formerly occupied by the ten forward temporary teeth when the temporary teeth are spread out, and the arch is enlarged as it ought to be at about six years of age.

Next back of these ten teeth come the four principal molars,



No. 9.

The five models on this page show the same mouth at intervals from 1904 to 1909, open and closed. The regulation was done with apparatus attached to the temporary teeth exclusively. The retainer was also attached to the 2nd lower temporary molars, so that when they fell out at about eleven years of age there was no longer any need of retainers.

and back of them again, on the diverging lines of the Bonwill arch, the twelfth year molars and the wisdom teeth.

It is evident that if this description is correct the grinding or occlusal ends of the first upper permanent or principal molars should at six years of age be about as far apart laterally as their necks should be at maturity; for, as the downward growth of the upper teeth takes place through the lengthening of their roots and the additions to the alveoli in this vicinity their normal development results in a slight leaning outward of the molar teeth above, so that when full maturity is reached these grinding ends will be a little further apart than when first erupted.

The size of the arches from front to rear, however, will be found to differ but very little from the size of the temporary arches for the same ten teeth in the same locality, when all is normal.

Now a few words about appliances for regulating temporary teeth:

Gold is the strongest material to use for making these appliances for little children. If the case be of Class 2 or 3 (Angle classification), in which inter-maxillary rubber bands are to be used, it is most desirable to use screw bands. That is, bands which combine cement for an attachment, with a nut to clamp them firmly for greater security.

But in Class 1, cases where the principal molars are already properly articulated, and in cases where the initial expense must be considered, bands may be made of thin gold faced platinum; or of German silver tubing sawn off to the proper length, festooned for the gum and made accurately to fit the anchor teeth.

A most accurate fit can be made by using thin steel bands to measure the teeth that are to be banded.

Then trying this steel band upon a tapering mandril whose rings are numbered, you will be able to adapt very accurately to the anchor teeth the bands that are to surround them.

This scheme was brought out by Dr. Bryan of Basle and has been very helpful to me.

When the teeth have been accurately fitted with their anchor bands, the bands should be contoured with contouring pliers, such as are made by C. W. Miller, Toledo, Iowa. This adapts the band fairly to the region of greatest convexity of the teeth, so that when cemented firmly to place they ought to last many months. One great objection to the baser metals is that they become weak through oxidation and sometimes give way. In placing anchor bands upon the molars or any other teeth, one should be careful that in biting none of the antagonizing teeth, above or below, strike these regulating bands upon their edges, or the appliances, at any point. For if they do it is only a question of time when these bands will be loosened and either driven into the gum or broken. Another frequently needed addition to the appliance is some means of pressing the four lower incisors, which have erupted in the same irregular position which they occupied in their formative process, forward to their correct arch with the lower cuspids. Three little aids come readily to mind. The first are what Dr. Jackson calls finger springs —gold and platinum clasp wire, 18 or 20 gauge, is bent around the circumference of a circle whose radius is 55 or 60/100 of an inch.

After getting this curve the long end of the wire is carried back to the anchor bands and soldered to them.

To make sure that they are soldered in the right place, the bands can be placed on their respective molars and a plaster impression taken.

Into this impression the bands should be placed and a model made of plaster and sand, with the six front teeth poured separately.

These six front teeth can then be arranged into a perfect arch and the finger springs, having been adapted to the corrected position of the six front teeth can be soldered on the model to the bands which are on the molars.

When forced to its place in the mouth, the slight resiliency of the wire will tend to press the incisors forward against the lateral arch, which passes around from molar to molar. The narrow and thin gold bands with a little spud projecting lingually should be carefully fitted and cemented to the lower lateral incisors so that the finger springs shall be held down to their work and not be allowed to slide upwards.

A twisted silk ligature passed between the lower central incisors and attached to these finger springs where they cross each other and then tied to the labial arch will greatly assist this spreading.

A shorter bit of the gold wire made around the circumference of the same circle (55/100 radius), having either a loop in the middle or a hole drilled from above downwards and a loop or hole at each end with which to tie this lingual arch to the labial, thus embracing the six lower front teeth, will often serve to accomplish the forward movement of the lower incisors and their torsion at the same time.

This accomplishes with one piece of apparatus the regularization of all four or six of the lower front teeth.

If screw bands have been used, this lingual arch can be attached to the projecting ends of the screws used on the bands, by means of two little parallel tubes put together like a figure 8. The lower one of these tubes is split and made to slide over the projecting end of the screw. Each upper tube carries one end of the lingual arch, which is supplied with a tiny nut, which prevents its sliding backward any further than is desired.

This lingual arch can also be drawn forward towards the labial arch by means of the ligature silk.

ACTUAL MEASUREMENTS OF THE TEMPORARY AND PERMANENT UPPER AND LOWER CENTRAL INCISORS.

By SINCLAIR TOUSEY, A. M., M. D.

Name, Age Weight	Temporary				Permanent			
	Upper Centrals		Lower Centrals		Upper Centrals		Lower Centrals	
	R.	L.	R.	L.	R.	L.	R.	L.
8 years Matthew Sweeny	Oblique 38	38	24½	24½	Indented 25	26	Badly Indented 15	15
10 years Clara Tucksmith	36	36	22	22	24	25	Indented 15½	15½
9 years Cecelia Leonard	33	32½	21	21	25½	25½	Indented 21	21
6 years Nora Ferguson	35	24				22		
10 years; 73 lbs. Gretchen Winter	29	28	19	19	Oblique 25	25	14	14
10 years; 72 lbs. Margaret Frutchy	33	33	21	21	Oblique 25½	25½	16½	16½
10 years; 63 lbs. Florence Fox..........	34	33	21	21	25	25	Oblique 14	14
8 years Jeannette Stevens......	Oblique 31	32	22	22	Oblique 22½	23½		
10 years; 60 lbs. Sissie Reilly...........	36	36	23	23	Oblique 23	23	11	11
10 years; 60 lbs. John Ryan............	33	33	21	22	24	25		

THE NECESSITY FOR HIGHER EFFICIENCY IN TEACHING AND PRACTICING DENTISTRY.

BY C. N. JOHNSON, M. A., L. D. S., D. D. S., CHICAGO.

(President's address, delivered before the Odontological Society of Chicago, November, 1911.)

To the practitioner of dentistry who is observant of the rapid strides made by the profession, both in its educational methods and in its daily practice, there is quite naturally a fair measure of pride in this achievement. This is perfectly legitimate and in so far as it serves as a stimulus to better things it is well, but the moment it begins to display itself in any spirit of self satisfaction or unctuous complacency, that moment it becomes dangerous. The most critical time in the history of a man or a nation is the moment of success, and the same may truly be said with reference to a profession. There is nothing more dangerous than a spirit of self adulation, and to be perfectly satisfied with one's self is to start on the downward road to deterioration.

It is well, therefore, that at times the weaknesses in our profession be pointed out, and in this view of the case we should welcome any just criticism which is meted out to us. It is true that we are sometimes subjected to criticism which is not only unjust and untrue, but which is positively harmful. Any stricture which is biased and wide of the mark does more harm than good, because its tendency is to tear down instead of build up, and it is always easier to say how a thing shall be done than to do the thing itself.

We have had men in our own ranks whose natural pessimism and inherited or acquired obliqueness of vision has led them to snarl at the profession on every possible occasion, but who have not in their own capacity done anything to build up the profession and place it upon a better basis. We have grown to tolerate these men, sometimes possibly to our detriment, because we have believed them to be either honest in their convictions or harmless in their results. Occasionally some of their strictures have had sufficient truth in them to accomplish a measure of good by stimulating us to better things, but usually their perverted ideas have led to little but irritation and disgust.

There are two evils which unjust criticism of our profession may bring about. It may lead to discouragement and bitterness in the profession and it may unduly prejudice the public against us. Our capacity for doing good is always limited by any suspicion or distrust of our intentions or abilities on the part of the public, and anything which erects a barrier between us and the people who need our services is harmful.

A prominent illustration of this is an article which appeared in the August, 1911, number of *Current Literature,* a magazine which has a wide circulation and which apparently lent its endorsement to the promulgation of ideas inimical to the reputation of American dentistry—or, in fact, of any dentistry. A very prejudiced and unwise article had been published in the London *Lancet* by Dr. William Hunter, pathologist to the London Charing Cross Hospital, attacking dentistry as working a most baneful influence on humankind, and it was this article which *Current Literature* so unjustly exploited.

Dr. Hunter's contention is that "gold fillings, gold caps, gold bridges, gold crowns, fixed dentures, built in, on, and around diseased teeth, form a veritable mausoleum of gold over a mass of sepsis to which there is no parallel in the whole realm of medicine or surgery." And then he says: "There is no rank of society free from the fatal effects on health of this surgical malpractice. I speak from experience. The worst cases of anemia, gastritis, colitis of all kinds and degrees, of obscure fever of unknown origin, or purpura, or nervous disturbances of all kinds ranging from mental depression up to actual lesions of the cord, of chronic rheumatic affections, of kidney disease, are those which owe their origin to, or are gravely complicated by, the oral sepsis produced in private patients by these gold traps of sepsis. Time and again I have traced the very first onset of the whole trouble of which they complained to a period of a month or two of their insertion. The sepsis hereby produced is particularly severe and hurtful in its effects. For it is dammed up in the bone and in the periosteum, and cannot be got rid of by any antiseptic measures which the patient or the doctor can carry out. Moreover, it is painless, and its septic effects therefore go on steadily accumulating in intensity without drawing attention to their seat of origin.

"Such are the fruits of this baneful so-called 'conservative dentistry.' The title would be a fitting one if the teeth were a series of ivory pegs planted in stone sockets. But the teeth being what they are—namely, highly developed pieces of bone tissue, possessing, I would point out, a richer blood and nerve supply than any piece of tissue of the same size in the whole body—and planted in sockets of bone with the closest vascular relations to the bone and the soft tissues of the periosteum and the gums, the title that would best describe the dentistry here referred to would be that of 'septic dentistry.' Conservative it is, but only in one sense. It conserves the sepsis which it produces by the gold work it places over and around the teeth, by the satisfaction which it gives the patient, by the pride which the dentist responsible for it feels in his 'high-class American' work, and by his inability or unwillingness to recognize the septic effects which it produces."

Dr. Hunter's entire article is along the same intemperate lines, and is necessarily very misleading to the public in giving the impression that all dentistry is harmful. From beginning to end he says not one word favorable to dental service of any kind, nor does he make any distinction between good dentistry carefully performed under proper hygienic measures, and the sort of dentistry which places fillings, crowns and bridges in and around "diseased teeth." It does not seem to be within Dr. Hunter's range of observation that teeth may be treated for disease and rendered healthy before fillings or crowns are inserted, and that it is one of the tenets of our professional faith that this shall invariably be done. His repeated flings at American dentistry are most unfortunate but they must be allowed to pass as quite unworthy the dignity of Americans to notice. Dr. Hunter never would have made them if he had been personally and professionally acquainted with the representative practitioners of dentistry in America.

But let us not look at this incident wholly in the spirit of resentment. Let us try to profit by it in the sense of becoming better men by reason of it. While it is true that a grave injustice has been done to American dentistry on the part of Dr. Hunter, and particularly in the fact that his ideas should have been exploited by an American magazine, yet we must not shut our eyes to the fact that there is too much dentistry being done along the improper and unscientific lines pointed out by Dr. Hunter, and that the better element in the profession must lose no opportunity of recording its disapproval of such practice. Our professional honor should be one of our most precious possessions, and this we can never maintain till the rank and file are stimulated in their conscience and elevated in their ability. No man should assume to call himself a dentist who is not fully alive to the factor of sepsis as it affects the welfare of the patient, and no dentist should ever apply a crown to the root of a tooth without first seeing to it that the root is in a normal condition. Not only this, but in applying the crown he should aim to get such adaptation and have the root so perfectly protected that subsequent sepsis is impossible.

These things have been taught in the profession ever since crown work was begun, and to say that dentists are ignorant or indifferent regarding the significance of sepsis is to misstate the facts. Some men are careless and some are worse. In every calling there is always the irresponsible element, and it is this element which we should strive to reform. The need today is for the higher minded ethics of the profession to be carried into the daily practice of every dentist. Not merely that a man shall talk and write glibly of the necessity for hygienic considerations in the performance of our work, but that he shall day after day in the privacy of his own office enter into the scientific spirit of his operations, and not content himself till each case has been subjected to the closest scrutiny to bring it under the requirements of the latest and most approved principles of aseptic and hygienic dentistry.

Never in the history of the profession has the call been more urgent than now for self sacrificing and painstaking effort on the part of the dentist. Never before has public attention been so focused upon him. Our educational campaigns all over the country are directing the attention of the people to what we are doing and to the significance of our work, and we are to be weighed in the balance in the eyes of the public. It were fatal to our future usefulness if we in any way fail to measure up to the expectations which today are being built as to our efficiency in conserving human comfort and prolonging human life, and when we know in our inmost hearts what can be done for humanity by the application of the most approved and scientific methods of dentistry in ministering to human needs, it is something akin to criminality for us to neglect any opportunity of keeping faith with the people. And if we keep faith fully and unreservedly, not one man or two or a hundred, but every man and woman who today is practicing dentistry, then shall there be no warrant or excuse or even the possibility of excuse for making such wholesale and apparently vindictive charges as Dr. Hunter has made against dentistry in the article quoted. But if a few persist in doing indifferent work just so long will isolated cases be picked out by our critics and the baneful effects of these cases will be heralded widecast to the discredit of the entire profession. In this view of the case it does seem at this time particularly important for the conscience of the profession to be quickened to the highest pitch so that every bit of service which we perform for the people shall reflect credit upon our calling rather than bring it into disrepute.

I look upon our professional situation today with mingled sentiments of hope and anxiety. I never was so hopeful as now regarding the future possibilities of our calling, and I never was more keenly anxious lest we allow the golden moment of our opportunity to pass us by and leave us without the full fruition of our rightful heritage. The issue lies with us. If we do our duty as practitioners day in and day out, at the chair and the bench, if we approach our work in the spirit of a serious professional and humanitarian responsibility, and meet each situation as if the eyes of the world were upon us, then not all the powers that be, outside our ranks, can injure us in the estimation of the world. If we do our whole duty we can afford to ignore such baseless strictures as have been cast upon us in the article quoted—in fact, such strictures will never be printed because they will never be written.

The closing paragraph of this article probably carries with it greater injustice than anything else contained therein. It says:

"There seems only too good reason to infer, moreover, that the professional education of dentists is often of the most superficial sort. The profession is recruited in some American communities almost haphazard. The training is frequently of the manual kind. Provided the student displays a digital dexterity in manipulation, he is not questioned too closely sometimes regarding his scientific knowledge. He goes about his work in the densest ignorance of such things as therapeutics and infection. He is no scholar and in no sense a man of science."

It has not been my privilege to read Dr. Hunter's original article in the *Lancet*, but it is difficult to believe that he should have given utterance to so gross a libel on our educational institutions as is herein contained. Those of us who are actively engaged in educational work are among the last to claim that perfection has been reached in our methods or our systems, and yet we can say without arrogance and with a reasonable degree of modesty that so far as an adequate preparation for their life work is concerned dental students are better prepared by their courses in college than are students of almost any other calling. In fact, the statement has been made by an eminent practitioner of medicine who is also dean of an honored and reputable medical college that, as a general rule dental students are better equipped on the day of their graduation to go out and intelligently administer to the dental needs of the people than are medical students equipped to administer to the medical needs. To say that the dental student "goes about his work in the densest ignorance of such things as therapeutics and infection," is to slander the intelligence of a large body of young men who are today being graduated from our colleges. These things are taught as carefully and with as much emphasis of their importance, as they are in the best medical colleges, and if at times a graduate lapses from the principles taught him in college and does not live up to his highest possibilities the same thing may justly be charged against the medical graduate. There is no intent in all this of resorting to the "pot calling the kettle black" kind of argument, but it must be remembered that young men are pretty much alike in all walks of life and that a few black sheep are likely to enter any fold.

In most of our dental colleges in America the training embraces something more than the "manual kind." It includes anatomy, physiology, histology, bacteriology, pathology, chemistry, physical diagnosis, materia medica and therapeutics, as well as the other so-called "practical branches," and no man can justly say that the training is not thorough. These fundamental subjects are all amply demonstrated in the dissecting room and the various scientific laboratories with which every progressive dental college is well equipped.

If manual training is made a prominent feature of dental college instruction, it is simply because that kind of training is absolutely necessary to properly equip a young man to skillfully serve the people. If there is any one thing pathetic in dental circles it is to see the man who has laboriously stored his mind with all of the theories incident to a college course but who lacks the digital skill to properly apply those theories. The only man who is more unfortunate than he is the one who has neither the theory nor the manual aptitude.

To say that dental colleges ignore the scientific in their instruction is to make a misstatement of fact, as any unprejudiced investigator may learn by visiting our colleges and noting the character of the instruction. In view of the brief period in which dental colleges have been in existence the present degree of perfection to which they have brought their work is something of which the profession as a whole need not feel ashamed. And yet in the same breath, I must acknowledge that I do not like that word "perfection." Nothing in all the universe is perfect, least of all are educational methods, which in order to serve the best purpose must be subject to constant evolution. And it is in the spirit of seeking the most certain way of evolving to better things that we should accept even so unjust an arraignment as that contained in *Current Literature.* Some of the most progressive men in our teaching ranks have pointed out in the recent past that there are certain subjects which may be more effectively taught in our colleges than they are, and every energy is being directed to accomplish this. The two subjects most often referred to are pathology and diagnosis, and in some schools these subjects are being emphasized today in a manner commensurate with their importance. It remains for all schools to recognize the fundamental bearing of these subjects on the future practice of the graduate, and to send him out better equipped than he has been in the past to meet the emergencies imposed on him by an ignorance of these fundamentals.

In making a plea for higher efficiency in teaching and practicing dentistry, I am impelled by no rancor toward any of our critics. I have a theory that we should all be helpful to one another whether in the capacity of a critic or a commendator, and so I am inclined to respect the opinions of my fellow man. But I have always been so intensely jealous of the fair name and reputation of my profession that I am keenly touched when any unjust reflection is cast upon it, and in view of the fact that I do not believe in retorting in kind there is only one course open to my mind to overcome the difficulty. This is by a general elevation of our efficiency as a profession to the extent of making criticism uncalled for or even impossible. When we have attained to that we need fear no shaft which may be directed against us, and in this connection it is well for us always to remember that it is more profitable to expend our energy in perfecting our methods than it is in explaining and defending our mistakes.

THE CARE OF THE TEETH DURING GESTATION.*

BY J. C. WINTERS, D. D. S., KANKAKEE, ILL.

The greatest development and growth in all the world is that of the human being from the time of conception until birth. It is of such marvelous construction, yet so delicate; so full of life, yet so impressionable. It is conceded by our greatest thinkers that impressions made during the period of gestation are exceedingly important ones. Many a child's future is determined before he is ever born. This being true, how important it is that every prospective mother should have the best of care from all sources.

Her comforts should be considered first of all in her household. She should have comfortable clothing and as pleasant surroundings as possible; but most important of all, she should be kept free from pain. So, gentlemen, the time has passed when it is considered necessary that women should suffer from toothache during pregnancy. It has long been taught that relations between the teeth and the impregnated uterus are so intimate that each must suffer from the faults of the other. It is an old saying, "For every child a tooth."

Most every expectant mother thinks that an extraction is very apt to cause a premature delivery. Consequently they suffer on through pregnancy, allowing their teeth to be neglected until by the time they find it convenient to visit their dentist some of their teeth are so far gone that extraction of one or more becomes necessary.

It is the duty of every dentist to relieve pain and not to cause it. Every woman who finds herself pregnant should visit her dentist, tell him her condition and place herself in his hands to do whatever work he finds necessary to be done. We should take special care to avoid giving her pain at such a time, not because it would be hazardous, but for the necessity of not shocking her nerves any more than possible on account of pre-natal impressions as aforesaid.

If there are any cavities that are liable to cause pain before the pregnant woman's delivery, I would fill them. Other teeth that are too bad to save I would extract. If an anesthetic is necessary, her attending physician should be called to administer it.

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*Read before the Kankakee District Dental Society.

There is no active circulation in either dentin or enamel, so that the supposed divergence of the nutrient supply from the teeth to the growing child must then be largely imaginary, and there can be no sudden decaying of the teeth during pregnancy.

The general impression that the teeth decay more rapidly at that time than any other may be true in some cases for the reason that the pregnant woman's mind is all taken up with preparations for the little one coming and she neglects the care she usually gives to her teeth. Mineral tonics are often prescribed for her and they are apt to injure her teeth. At that time a woman is likely to go a year without visiting her dentist.

If from the performance of any necessary operations on the teeth that have been skillfully and carefully done, any harm has ever been done the prospective mother or her unborn child, there has never been a record made of it.

Of course it is true that a pregnant woman is in a more or less nervous condition, but that does not necessarily prevent her from having work done that will save her from the toothache.

PROPHYLAXIS.*

BY DR. A. C. WILLMAN, KANKAKEE, ILL.

When dentistry was in its beginnings, men tried to stop toothache principally, and they did it with various instruments designed to remove the tooth—and sometimes more than one—together with a section of bone. These instruments were fearfully and wonderfully made; the very sight of some of the old turnkeys were enough to stop a full sized toothache. Our modern forceps are a wonderful improvement and development over the instruments of those days.

Next, men began to try to stop the pain in teeth with drugs, and efforts were made to repair the damage resulting from the decay. Gold was used. Cement, gutta percha, then amalgam. tin and various things. Our modern inlays are the latest development. Along with the evolution of filling materials came a perfecting of cavity preparation and methods of inserting these fillings. Men began to do their work more thoroughly and our operative technique of today is the result of a gradual upward development.

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*Read before the Kankakee District Dental Society.

The supplying of missing teeth by various kinds of bridgework is another story of development.

The history of dentistry, as well as other sciences, is a story of gradual development, and our predecessors were so busy devising ways and means of curing and relieving disorders of the mouth that means of preventing those conditions were not much thought of.

The condition of the surfaces and necks of the teeth was largely unnoticed and uncared for. Twenty years ago some thought that deposits of tartar on the necks of the teeth were beneficial; at least they never thought of removing them, even when cleaning the teeth. Conscientious men they were, too.

But as the profession advanced and developed it was found that these deposits were doing injury to the surrounding tissues, causing inflammation and loss of attachment. They also made breeding places for microorganisms, made the breath offensive, and made the mouth look as bad as the finger nails of a coal heaver. Then we were taught to clean the teeth, removing all deposits and polishing with pumice stone. Still we had inflamed conditions of the oral cavity, breeding places of disease, etc. Many disorders and disturbances of function were found to have their origin in the mouth and gradually we began to hear of something called "prophylaxis."

Now prophylaxis is looked upon by many members of the profession as simply a more thorough cleaning of the teeth than heretofore.

But, gentlemen, prophylaxis is preventive dentistry. A great many other things besides tartar—both salivary and serumal—can and do, do injury in the mouth. In its broad sense, prophylaxis means putting the mouth in a clean sanitary condition, and embraces a great many things besides cleaning and polishing the teeth.

Crowns and fillings that are irritating the gums and affording lodgment for debris must be removed and made to fit perfectly. Bridges that are food traps must not be left undisturbed. Old roots that are useless and act as garbage cans must be removed, contact points must be restored where their absence makes what are known as "meat holes." Abscessed teeth must be treated and cured, or extracted. Pyorrhea pockets must be eliminated.

In short, no irritation of any kind or lodging place for food, or focus of infection, must be allowed to remain, and all the tissues are to be put in a firm, healthy condition. Such a mouth is a pleasure to both patient and operator, and the public is beginning to understand that with a mouth harboring all sorts of garbage and filth a healthy body can hardly be expected. If you pollute a stream at its fountain it will surely be foul to the end.

Gentlemen, bad dental work is responsible for a great deal of the conditions today. Crowns are made that are several sizes too large, do not hug the tooth at the neck, go too far under the gum and have no contact. Fillings are made which are rough and have overhanging edges, and also have no contact. Bridges are made which have inaccessible places.

Many of the teeth are rough—of the washboard or nutmeg grater variety—which no one, no matter how conscientious, could keep clean. Old roots are allowed to remain under bridges and plates, sometimes. Pus pockets are neglected. Deposits above and beneath the gums are passed over. These things ought not to be and the public are being educated today to expect better things—and they have a perfect right to do so.

In conclusion, let me say that we ought to look at the mouth as a whole and not simply look at the one tooth we are filling; to make it our aim to put the whole mouth in such a condition that it shall redound to the health and pleasure of the patient, and then it will also be to the glory of the profession, whose mission is just as much to prevent disease as to cure and repair its ravages after preventive measures are too late.

GUTTA PERCHA IN COMBINATION WITH VALIDOL CAMPHORATUM.*

BY ZAHNARTZ H. W. C. BÖDECKER, B. S., D. D. S., M. D.

Though practical experience has proven the value of gutta percha, its use as a permanent filling, owing to its slight power of resistance, is limited to but few cavities. As a temporary dressing or as a root canal filling, however, gutta percha with its various combinations finds a wide application. In all cases where this material is used I have found that by combining it with validol camphoratum it may be more easily introduced into the cavity and that at the same time it makes a more durable filling.

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*Read before the W. D. Miller Dental Club of Berlin, Germany, November 11, 1911.

Validol camphoratum is a colorless, oily fluid, whose chief ingredients are valerian, menthol and camphor. It is usually prescribed as a sedative, but has also been recommended as a remedy against headache and against sea sickness. Prof. Schoeder (Berlin) uses validol camphoratum in doses of eight drops on a lump of sugar, to combat the nausea while taking impressions of the mouth.

The method of combining validol with gutta percha is simplicity itself. In contradistinction to the ordinary gutta percha, the material does not stick to a warm instrument if this has previously been dipped into validol. In making the filling the gutta percha, softened in the usual manner, is picked up with an instrument and dipped into validol before being introduced into the cavity. The surface of the gutta percha is immediately dissolved, forming a plastic mass which adheres to the walls of the cavity, even though they are slightly moist. The validol penetrates the gutta percha in the shortest time and keeps the mass plastic until it has become quite cold. The gutta percha so treated becomes just as hard as that to which no validol has been added. Herein lies the value of validol as compared to other solvents, such as chloroform or the essential oils, as with these the gutta percha but slowly regains its original hardness.

I will briefly describe the technique of making the various fillings with gutta percha and validol camphoratum.

In making a permanent filling a quantity of warm gutta percha sufficient to fill the cavity is dipped into validol and firmly pressed into the cavity with a broad instrument. With a warm burnisher, previously dipped into validol, the surface of the filling is made smooth. If the amount of gutta percha introduced is not sufficient more may easily be added in the same manner. The excess can be cleanly cut off with a hot spatula. In trimming a filling the instrument should be heated, then dipped into validol and after use be thoroughly cleaned before being heated again. Fillings made in this way are always smooth, as the gutta percha, no matter how often it has been folded during introduction or smoothing, always unites again, thus making a perfectly homogeneous mass. This obviates the inconvenience to the patient often caused by the roughness of ordinary gutta percha fillings.

For temporary work I, as a rule, use temporary stopping. As this is composed of gutta percha and wax it readily combines with validol. The cavity to be filled need not be perfectly dry. To make a tight temporary filling it is necessary only to remove the visible moisture with a pledget of cotton. This is a great convenience in temporarily filling a cavity after taking an impression for an inlay. To make a filling of this kind the end of a stick of temporary stopping is softened over an alcohol flame, then dipped into validol and thereupon into some form of antiseptic powder. For this purpose I prefer dymal, which, in spite of its antiseptic qualities, is tasteless and colorless. The object of the powder is to act as a permanent antiseptic, preventing decomposition under the mass of gutta percha which happens to rest upon the gum. From the softened stick of temporary stopping, which has been treated with validol and dymal, a piece of requisite size is cut off with a hot spatula and introduced into the cavity. If the cavity is large the gutta percha may be brought to place by exerting pressure with the index finger, which has been moistened with water. The excess is removed with spatulas and the filling smoothed either with the finger or a burnisher.

The validol not only makes the introduction of gutta percha easier but it also has a beneficial action upon irritated or inflamed pulps and upon sensitive dentine.

In this connection I wish to call your attention to a method of treatment which, though it is not new, deserves to be applied more often. I refer to temporary fillings which are introduced to relieve the pain of pulpitis or to reduce the sensitiveness of the dentine during subsequent excavation of the cavity. Such fillings may, for the want of a better name, be designated as palliative fillings. In my practice I have adopted the palliative filling as a routine treatment in all cases where there are any signs of pulpitis, where the cavity has reached the neighborhood of the pulp, and in the majority of the cavities in the teeth of very sensitive patients.

As a filling material for this purpose I have found nothing to surpass gutta percha, and when used in combination with validol camphoratum and dymal it has almost invariably given me the most satisfactory results. Though this palliative treatment will not make excavation absolutely painless in every case, it will always markedly reduce the sensitiveness of the dentine. The filling is left in place from one week to several months, depending on whether it is a simple case of sensitive dentine or whether the pulp of the tooth is inflamed.

In filling root canals a combination of gutta percha and validol camphoratum, prepared in the following manner, is to be preferred to chloropercha: To 5 cc. of thick chloropercha add 0.5 cc. of validol camphoratum and 0.25 g. dymal. The chloroform is then allowed to evaporate until a fairly hard, brittle mass remains. Brought into contact with a warm instrument the mass immediately liquefies. In filling a canal the latter is first dried with absolute alcohol, then washed with chloroform, and again dried by heat. The walls of the pulp chamber and the entrance of the canals are then slightly moistened with validol. To avoid an excess this is accomplished most safely by using a broach around which a few fibers of cotton have been wrapped. Small pieces of the gutta percha validol are then introduced, then liquefied with a hot broach and pumped into the canal. The gutta percha will be carried along the canal just as far as the broach reaches and at the same time become intimately adherent to the walls of the canal. As the gutta percha validol only replaces the chloropercha, other material must be used to completely fill the canal. If gutta percha points are used the danger of pulling out the point in withdrawing the plugger may be overcome by dipping the plugger in validol before exerting pressure.

Before concluding I wish to describe my method of displacing the gum which has overgrown a root, by means of the gutta percha saddle. I will assume the tooth to be crowned is a first bicuspid. The crown has been broken off and the gum has covered the margins of the root. The practice of removing the hypertrophied gum by operative interference or by the electro cautery cannot be recommended, as it is not possible to determine how far the gum will retract when it heals. Though the gutta percha saddle is far slower in its action it offers us the certainty that the gum will again adapt itself to the root in a normal manner.

In applying the saddle, I usually proceed as follows: After introducing a fiber of cotton saturated with tricresol into the canal, I place a small piece of temporary stopping dipped in validol camphoratum and dymal upon the root—in the case assumed upon the root of the first bicuspid. A strong silk ligature is then passed in the form of a figure 8 about the second bicuspid and the cuspid.

The ligature is drawn tight and knotted. A sufficient amount of temporary stopping to fill out the remaining space is then softened, dipped into validol and pressed into place and modelled between the thumb and index finger, previously moistened with water. A new gutta percha saddle is placed after each canal treatment. In most cases the gum will be completely displaced in five to ten days. After the crown has been set the gum returns to its normal condition in a very short time. If a saddle of this kind is to remain in position for a longer time it is advisable to use a wire ligature and red gutta percha. A saddle of this kind was worn by one of my patients on a lower first molar for over three months without producing any ill effect or disagreeable taste in the mouth. The object of the silk or wire ligature is not alone to hold the gutta percha in place, but also to prevent the pressure of the gutta percha from driving the adjoining teeth in a mesial and a distal direction.

On anterior teeth the gutta percha saddle may be combined with a temporary crown. To a suitable facing a short German silver post is attached with soft solder. Just below the joint long silk ligatures are tied. The post and the back of the facing are then covered with soft temporary stopping which has been dipped in validol and dymal. The crown is pressed into place and the ligatures tied to the adjoining teeth. All spaces are then filled out with temporary stopping.

Without the use of validol it is not alone difficult to make these gutta percha saddles, but they also inconvenience the patient, as it is rarely possible to produce an absolutely smooth surface on a large filling made of ordinary gutta percha.

In conclusion I wish to repeat that I never use gutta percha in the mouth without combining it with validol camphoratum. Experience has shown me that it makes a tighter and more durable filling, that it has a decidedly sedative action on the pulp, and that last but not least it makes the work of the operator less trying.

THE DREAD OF DENTAL OPERATIONS.

BY ARTHUR G. SMITH, D. M. D., PEORIA, ILL.

That dental operations *are* dreaded is a sufficiently well established fact. Let us not under-estimate or make light of this feeling of horror which our work inspires in the minds of the great majority of our patients, but accept it as an inexorable fact; face it squarely, try to find out just why it exists, and just what causes it; after doing this we will surely be in the best position to take whatever steps may be possible, to remedy a state of affairs which we all—dentist and patient alike—deeply deplore.

We are apt to think that tartar in some of its various forms, and caries, are the great fundamental troubles with the teeth. This is not at all true; the greatest trouble with the teeth of all animals and of man in his primitive state, is that they wear out. In other words, in spite of their hardness, and in spite of many ingenious devices which Nature has made use of in some of the animals to renew the teeth, the great fundamental dental trouble is plain ordinary "wear and tear."

This being so it is evident that if Nature is wise and far sighted, as we are all willing to believe, she would take every possible precaution to prevent undue loss of tooth structure through excessive wear or abrasion. That the teeth should be freely and vigorously used is of the utmost importance to the well being of the entire organism, however they must not be abused or put to needless or harmful tasks. Consider how perfectly all these things are provided for in the nerve equipment of the teeth and their supporting structures, for as long as the teeth are not used on anything hard enough to injure them, or cause undue wear their possessor is free to bite or chew in perfect comfort so far as the sensations induced in the nervous organism of the supporting structures of the teeth are concerned.

How different the nervous sensation when anything of extreme or injurious hardness is encountered by the teeth; the entire nervous equipment of the region sends up an angry protest and the effort of using the teeth on any substance of such extreme hardness is at once abandoned—be the "chewer" man or animal. Stop and think for a moment of how your nerves protest when you bite on the accidental pebble or bit of chipped earthenware in your food, think of how the trapped or caged animal never continues to bite or chew upon the metal of its trap or cage. What then do these simple facts mean? Obviously that Nature has erected this nervous barrier to protect the teeth themselves against improper and injurious uses. Moreover this barrier is a very real and positive thing. How much money would it require to hire you for instance to vigorously chew sand for about 15 minutes? Yet this sand is not as hard or as capable of inflicting injury upon the teeth as the carborundum wheel.

Here, then, lies the secret of the whole matter of the horror of the dental operation—aside from the consideration of pain. When we allow the dentist to use some of the hardest known substances upon our teeth we are violating and outraging one of the great natural safeguards that Nature has given us for our own protection. The fact that we are doing this or allowing it to be done, for our subsequent great benefit does not help the fact or the physiology of the matter in the least, any more than the desire to have a necessary surgical operation performed lessens the sensation of the skin. In both cases we are forcing the nerves to submit to the very thing that they have been ordained by an infinite wisdom to cry out against.

The full realization of this fact should cause us as dentists to have a very broad charity for all the protests that our patients make against our work, and a little reflection will show us that by taking thought of this matter we can in many cases modify our methods of operating so as to materially reduce the disagreeable sensations arising from our necessary instrumentation.

Foremost appears the fact that since we cannot render our work pleasant or even agreeable we should do the next best thing and make every move efficient in the highest possible degree. All needless or half hearted contact of cutting instruments with the teeth should be studiously avoided. Every cutting motion should accomplish the very maximum of proper work. True running carborundum wheels of medium grit are among the most effective and merciful means of extending cavities into sound tooth structure, when it so frequently becomes necessary to do so. The sand paper disc is readily borne by most patients. Look out above all things for coarse and uneven stones, dull or poorly cut burs, and slipping and ineffective hand instruments.

If in addition to the above suggestions we will study carefully the pet aversions of each particular patient we can do much to remove the dread with which our work has been so long regarded, and in our striving for less disagreeable methods let us not lose sight of the fact that in the judgment of our patients every dentist is as good or as bad as we ourselves are.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held November 21, 1911, with the President, Dr. G. Walter Dittmar, in the chair.

Dr. George Edwin Hunt of Indianapolis, Ind., read a paper entitled, "The Oral Hygiene Problem."

DISCUSSION.

Dr. Don M. Gallie:

I assure you I speak for the whole society when I say that this is one of the most scholarly and interesting papers ever presented before this society. It is not only a paper fit and proper to be read before a dental society, but one that could be read with great interest and great benefit to the profoundest thinkers, to the great economists and sociologists of today, and it is a compliment and an honor to the society to have such a paper presented to it. When we stop and think for a moment that the essayist of the evening comes from that state that has produced literary geniuses and great authors, this paper is what we would expect from Brother Hunt, because he is Brother Hunt and comes from the state of Indiana.

The advanced thought expressed in this paper will keep us thinking. He does not come to us with some operative procedure, but he comes to us with a problem, which he presents in a lucid manner, and gives us pointers by which we can be guided to work it out.

When we think of what has been done, Mr. President, along such lines as these, when we think of the great campaign against the white plague and the efforts that have been made to stamp out typhoid fever, and when we think of other campaigns for better health and better conditions and contemplate the progress that has been made and is being made, there is reason for us to be hopeful of the campaign we are starting now, because we can only start, as the essayist has told us; we cannot expect to accomplish this great work in a short time. It will take many years before we can bring about such reforms as we desire. We may not be able to see the accomplishments in our lifetime, nor will our children see them, but I am sure the time is coming when it will be a crime and someone will be held responsible, for disseminating diseases by filthy oral conditions.

The thought that has been expressed tonight by the essayist as to the producer and non-producer is a new thought to the members of the society. The child at six years of age, with unclean mouth and with unhealthy oral conditions, is prevented from progressing in the way it should at school and when you think of the children that are every month retained or every session held in school beyond the time they should be, we know it is a great drain upon the resources of the community and country, and so it starts at the early age of six, and if allowed to go on the health of the child is impaired; the child is unfit for the work it is called upon to do, and long before his or her time, he or she is a non-producer, because such children in time depend upon someone to take care of them. It is not a question of how to handle the mouth or the teeth, but it is a problem which affects us and everybody. It affects the health of the world. This phase of the subject has been presented to us in an admirable way.

When we stop and think that during the last year health officials and the press of the country started a campaign to get rid of the fly, and not a paper in Chicago was issued without printing in large type the words "Swat the fly," I am sure everyone has noticed a reduction in the numbers and activity of that pest, and the time is coming I believe, when a fly will be something of a curiosity.

All campaigns toward the betterment of humanity have been opposed,—there was opposition to serum therapy and to the many different health movements that started of late, and we can expect opposition against this movement.

Only the other day a patient in my office was speaking of the movement in Chicago of the examination of the teeth of the children in the public schools, saying they were going to make a protest against these examinations because there was an epidemic of diphtheria in their section caused by the dental examiner. We cannot allow that to go by unchallenged. We must run that down, because we know that in carrying on this work it is for the protection of the public and it is a protection against the spreading of disease.

In speaking of the assistance which we must look to to carry on this campaign, Dr. Hunt speaks, first of all, of the physician. He speaks wisely, and he says the great majority of the best men in the medical profession are willing to support us and are anxious to join with us in this campaign.

In preparing a paper for the State Dental Society in Peoria, as most of you know, I wrote the health officers of all cities in the United States of thirty thousand inhabitants and over, and I received replies from the great majority of them, and in nearly every case they not only answered the questions I asked, but some of them added a little more. They said in effect they were anxious to take up the work with the dental profession, and that all we had to do was to enlist their aid and they would do their best and fight to a successful end this campaign. But, gentlemen, we must be better prepared and better able to join hands with the physician than we are at the present time. If there is any question that should be made clear to the dentists, it is that we must think of something more and of something beyond the scraping of the roots of teeth or the filling of cavities. We must think of the great problem of oral hygiene. We have to go beyond the manicuring of teeth and the fitting of crowns. We have got to know more about the science of these things. We must know more about the histology of the teeth; we must know more about physiology; we must know something about physiological chemistry, and we should start now. The time has come when the young men entering the profession should be stimulated and stirred up to take greater interest in these sciences.

Only the other night at a faculty meeting we had a strong complaint from a pathologist wishing that the dental faculty would try and impress upon the dental students that there is something else besides filling and crowning teeth. This gentleman stated that he did not get the attention or interest from the students that his subject required. We must know what to eat, when to eat, and how much to eat. What does the average dentist know about diet? How many of our profession are competent to advise a patient as to what he should eat? We are not competent because we have not directed our attention along these lines.

How best can this work be advanced? He spoke first of all of the assistance of the physician. He speaks of the press, the platform, the office, and then legislation. This is a great field, but we cannot accomplish much if we depend upon a dozen or more enthusiastic men to carry on this work. Every man should be a missionary in his office. No patient should leave the office without thorough instruction in regard to the care of the teeth, what to eat, and how to eat. Everyone of us should be a member of the American Medical Association, so that we can come more closely in touch with medical men. We know it is for us to deliver the message; it is not for the people to come to us and tell us something about this great work. We have a message to deliver, and it is up to us to go here and there to deliver this message and to do our best to further this great movement. We should point out what a great benefit it will be to humanity, and to this end we should avail ourselves of all the great club meetings throughout this country. All the women's clubs should be enlisted. Everyone should be considered, and we should present this subject to gatherings of teachers in different sections of the country. We should have dentists lecture on the oral hygiene problem. We should start with the school children, and I know that if this society or the state dental society or a committee of these bodies would go to the superintendent of public instruction, and present the question to him, he would see the great need of having this question discussed in schools. I am sure he will aid us.

Speaking about the condition of the teeth in children up to the sixth year, I think we will find the same conditions in the rich as well as in the poor. Recently in making examinations I was given the Jones School at Plymouth Place and Harrison Street, where you will find as peculiar a crowd of children perhaps as in any school in Chicago. It is made up largely of Italians, Chinese, some Assyrians, some Jews, and some colored children. We were surprised in examining the teeth of these little dagoes to find that the cleanest part about them was their mouth. The teeth were clean. The skin was filhy, but their mouths were cleaner than those of the average children. We found the first molars affected and some of the deciduous teeth very bad, but in only about two per cent did we find that the children had cavities up to the sixth and seventh grade in the front teeth. There were very few malformed teeth. There were very few defective arches, and no signs of adenoids. This must be due largely to the food they partake of. We found the molars of the Jewish children in a terrible condition. The first especially and all of the anterior teeth were in a wretched condition. The Chinese children had good looking teeth, everything about them clean. They were immaculate in their dress, skin clean, and mouths in excellent condition. The colored children were not found in as good condition as the Chinese or Italians, but were much better than the Jewish. There is no doubt that the examiners in the schools in some of the better districts will find children whose mouths are in a wretched condition, perhaps worse than in the poorest district.

At the meeting in Cleveland, where the question of oral hygiene was discussed, following the meeting of the National Dental Association, there were men there from all over the country, and the general opinion was that this question of oral hygiene is not one alone for the dentists, but for the state. We will work out the problem. We will aid the state, but there is no reason why we should shoulder responsibility and give the great amount of time necessary to carry on this work which is going to develop the citizen in the community, making him, instead of a non-producer, a producer, and to the end the state will be benefited.

To carry on this campaign there is a great deal of work for us to do. We cannot do it if we only have a handful of workers. All of us should take a part and an interest in this work.

The examination of the children has had a good effect already. I have had a dozen children in my office since vacation. They brought their cards from the examiner informing the parent that the first molar was in bad condition. Some of the other teeth were also in bad shape, recommending that these children be sent to a dentist immediately. So we must start in with the children. This movement must be begun with the school. But it cannot be done in a few days nor a few years, but it can be accomplished.

Dr. Charles E. Bentley:

You will understand the gentleman who has read this paper to you has put this question in the category of a problem. There has been so much written and so much said on this subject that it comes as a refreshment, to have a man present to us a problem and give an analysis of it, which leads me to say that while other men have talked and written about the question, this man has studied the question. There is a vast difference between the two.

I welcome this paper because it offers constructive thought concerning a subject upon which there has been a great deal of loose thinking and a great many inadequate methods for the meeting of the problem. This is very natural and is explained by reason of the fact that the dental profession has been wholly inundated by a terrific tidal wave that has swept over the country with very little warning of its coming, and hence we were not prepared for its tremendousness. We can readily understand, therefore, why there has been so little of constructive thought as to the way this thing should be carried out.

There was, I believe, a note of pessimism in the paper, and yet it was a healthy pessimism, for as someone has said, healthy pessimism is the resultant of intoxicated optimism run wild, and possibly it has been our intoxicated optimism concerning this question that has invited the healthy pessimism of this gentleman who has given us an analysis of the problem this evening.

The paper is admirably constructed. It has been divided into two parts. The first part deals with the ideal. The second part with the real, and the second part in turn may be divided into conditions that we are to meet either temporarily or permanently. The first part is philosophic and deals with a very large sociologic question, and it shows a grasp of some of the fundamental principles of some questions that we must thoroughly understand if we are going to analyze this problem intelligently, and to my mind, ladies and gentlemen, this is the first utterance indicating the way that it has been my pleasure to read or hear.

I have been familiar with this question from the beginning as some of you may know, and there are many of us who have watched the procession of events and, instead of an intelligent optimism, we have had pessimism. We had grown lukewarm in our enthusiasm, and I believe we had almost despaired of anything further resulting until within only a few years ago when our hopes came up again because of a general hygienic wave which is sweeping over the country. To me the most significant, the most attractive sentence in the first part of the paper was the one that says, "We are just beginning to understand the fundamental fact that a nation's asset—the most important national asset—is the human asset." Is not that a grand thought? It is true, and it indicates that there is a general awakening; that there is a good time coming.

He spoke of conservation. Yes, it is true, the state and the nation have taken greater scientific interest in the physical development of its plants and of its animals and of its minerals and of its trees than it has in the human species. We have heard much of the conservation of forests and coal lands and the pines, and so forth, but we have heard very little of the conservation of the human child. That is a natural result of our civilization, of our unfoldment, and is it not true, that property rights transcend human rights the world over? Is it not true that property rights are a greater concern to this nation than human rights? It has always been true up to the present. If there is a body of citizens belonging to the United States in any foreign land today whose property rights are in jeopardy, instantly the machinery of this government is set in motion to protect those property rights. On the other hand if lives were endangered, it would be the cause of considerable deliberation and possibly no action. You are all familiar with the fact of the thirty citizens from the West Side here in Chicago who last week went to the Mayor of this great metropolis and pleaded and begged and almost threatened him to have the crusade against vice he is making stopped. For what reason? Because it was interfering with their business. In other words, a great number of human souls caught in the vicious maelstrom may go down and out so long as it does not interfere with their business. Thus property rights have ever up to the present time, transcended human rights, and is the reason why the government of this country should take greater interest in its cereals, its minerals and trees than it does in human individuals. It is a peculiar fact of our civilization. But that sentence I referred to indicates there is something else coming; that there is a new day dawning; that there is an awakening, and that we are going to take more interest in things human from this time on, and I believe the author of the paper is justified in his conclusions. If the government is going to take more interest in its citizens, as much interest as it takes in its cereals and hogs, we are going to learn a certain biologic fact, and that is this: if the environment of any group is inimical to any part of that group, it endangers the whole group; or, unless the opportunity for full development is equal to all alike, it is going to retard the progress of the whole group. That is a biologic fact. It is a biologic fact that is written into the constitutions of all democracies, and it is an ideal that we have long dreamt of. It is the real spirit of democracy. It was for that reason that the French Revolution was fought and the streets of France ran with blood. It was for that reason that the cloak of monarchy was thrown off and a Republic was born, and it is for that reason that China has risen from its lethargic state today and is striving to give the rights that come under democracies and it would not surprise me to hear that China has been listed in the line of Republics. It has been the dream of man since the dawn of thought. This sentence I have called attention to has a deep significance, and do you not see in its fullness and realization a greater physical and mental development of the citizens of the country? It is going to bring out this great biological fact he has given utterance to.

The second part of the paper deals with the how, and I agree in toto with all that has been said. Yes, the physicians should be our co-partners. They should be made to understand that we are traveling hand in hand in this great movement, and also the school teaching force. I should mention in the way of a supplement to what has been said, text books of our schools should be revised, for they are the merest travesty of what they should be, and that these text books should be placed in the hands of the children so that they can imbibe in their plastic period some of the things we all know. But above and beyond this, I believe that one of the elements of success would be organizations with individuals other than dentists. I believe such persons as the social service workers, such persons as compose the women's clubs and others who may become converts to this cause should man these organizations rather than have dentists do so. Our motives are very largely questioned by a great number of people when we talk to them of extending the propaganda of oral hygiene. I, for that reason, would rob them of that and would say that these organizations should be manned by others than dentists and back of them should be dentists who will act as counselors and deliver that counsel who are able to show them the way and the reason for the faith that is in them.

As to the free clinic, all of these things contribute to one thing, and that is *public opinion.* It is public opinion we are trying to impress. It is the public conscience we are trying to reach. It is the masses that we are trying to impress, and the only way to do that is indicated in the paper, namely, by the persistent agitation, by wide publicity, so that in the end public opinion should be so impressed that we will get what we want and in the way we want it. Whether we will get it in our lifetime; that is, to have the state maintain this, I doubt very much, but we can pass the torch on to our successors and give them the result of our energy and the result of our experience, the result of our enthusiasm, and show to them it is the best we can expect to do in this generation. Therefore, I am in favor of the free clinic, even in its temporary form, for the reason that it has a most impressive influence among a class of people that it is necessary to reach. I believe there are five or six free dental clinics in this community and they are maintained today by the social settlement workers of this city, and there is no class of men or women I know of who are so competent to judge of the worth of this work as this class of workers. I believe we should do this out of humanitarian motives, and I believe that they are our supporters and co-operators.

Lastly, so far as legislation is concerned, it is the result of public opinion. Legislators will do what the public wants them to do; but legislation will not do what a group of people want done unless the people back of that group indicate how it shall be done, and almost all effective legislation has back of it public opinion. So, it appears to me, that public opinion is the thing we must seek to impress and must seek to create, and it must be done in two ways by constant and eternal agitation and publicity. Of course, there are details under these two heads that can be worked out, but these two things are very essential.

I feel keenly the impress of this paper. It has done me good. It has been philosophic in its reach, and in its imagination it has been poetic. In its literary construction it is perfect, but above and beyond all, it has been human.

Dr. F. F. Molt:

We have listened tonight to a masterly presentation of the basic principles of the Oral Hygiene movement by one of its foremost exponents. When I read Dr. Hunt's paper, I found myself so heartily in accord with every thought he expressed that I saw I would have to confine my discussion to enlarging upon some of his points and considering others in their local aspect.

I heartily believe that our profession has before it such an era of opportunity as we cannot afford to ignore, and we must not fail to take advantage of the opening that presents. As Dr. Hunt says, these movements do not reach their consummation in weeks, or months, but in years. Twelve years ago the Odontographic Society of Chicago requested of the Board of Education permission to examine children for dental defects. Their request was refused. A year ago they made a similar request and were received with open arms. Then with the co-operation of the Chicago Dental Society through the Public Service Commission and of that most able propagandist, Dr. W. A. Evans, then Commissioner of Health, an official foothold was gained, and the opportunity given to demonstrate the truth of their claims. It is admitted by medical men that without special knowledge of the teeth and with no exploring instruments, their examinations must of necessity be superficial and that unless a cavity is large enough "to throw a cat into" it is usually overlooked. We found that instead of their forty per cent, there were really almost ninety-seven per cent defective. This, of course, includes deciduous teeth, of which the prevailing idea has been that being temporary affairs anyhow they are unworthy of any attention, except that of the forceps.

And before I go further I want to ask a question. Are we wholly alive to our opportunity and are we ready to grasp it? It does not surprise us to hear from a layman that deciduous teeth do not need filling but it is rather astonishing coming from a dentist, and many of the school nurses have told of taking little tots with aching teeth to neighborhood dentists who told them just that.

And, again, what of dental prophylaxis? Without a doubt that is to be one of our most effective measures in combatting insanitary oral conditions, and yet how many of our profession if asked regarding prophylactic treatment would reply like the yokel, who when he beheld his first dromedary ejaculated, "There ain't no such animal." We must *all* be alive to these vital questions, and it avails nothing to deny that white is white.

I want, also, to make a plea for more research work and more credit for those men now engaged in it. As an example of the interest manifested by the profession in general, I might quote a prominent dentist of Chicago who has carried out an extensive series of chemical analyses of saliva, for which he has received honorary decorations from three foreign countries. Asked how many physicians had written him for reprints of his articles, he replied, "About Five Hundred." "And how many dentists?" "Twenty-five."

There are many opportunities for investigatory work. The last word has not been said regarding caries and erosion. Pyorrhea—its causes and cure—presents an unlimited field for research; saliva analysis; the effect on metabolism of such things as the increasing per capita consumption of sugar (which in eighty years has jumped from fourteen to eighty-four pounds per annum), or the effect of a diet over-rich in protein; what melts away the teeth of our alien citizens—and all these subjects are open for investigation.

Dr. Hunt has well said that the profession cannot carry the burden of inspection and clinic work indefinitely without remuneration. But he feels as we have here that invariably it must be instituted by the profession and its need and feasibility demonstrated before it will be assumed by the state. It takes time to convince those in charge of municipal finances that it will be civic economy to take care of these poor little unfortunates. The humanitarian aspect appeals to all but we must consider the question from its utilitarian side.

It has been asserted that two defective teeth, aching, causing absence from school, and aberration of thought while in school, will delay a child six months in the completion of his elementary course. In the elementary schools of Chicago last year there were 8,549 children who failed to make their grades. The per capita cost of a year's schooling is $34.40, making an aggregate cost to this community of $294,085.60.

Bad teeth are by far the most prevalent of physical defects, so that although it is impossible to state just how many of these children were retarded by any one cause it stands to reason that the greatest percentage were held back by this. Data regarding cost of dental services in the dispensaries in this country are meager. Rochester found the cost for each child—57 cents. German clinics average 82 cents, and in England in asking for financial provision it has been estimated at $1.00. This is the beginning. Once we have placed the mouths of these children in good condition, additional services needed, would be a minor consideration. The increasing intelligence regarding care of the mouth and the necessity for it, will aid immensely. And there cannot but be an increase for. with oral hygiene being taught in the schools by lectures, leaflets and demonstrations, with oral hygiene crying aloud from magazines and newspapers, and such co-operation as is at hand from the medical profession, health and school authorities, it will be hard for anyone to avoid becoming imbued with the spirit of the creed.

How many problems, economic and sociologic, will be aided in their solutions! School and civic authorities have always the problem of retarded children, who become truants and perhaps eventual criminals, and health authorities face constantly the problem of caring for invalid non-producers. Both, as Dr. Hunt has said, are a load on the shoulders of the producing element.

Then, again, in controlling contagion one of the greatest difficulties, aside from isolating cases, is to discover the contagion carriers. Cultures taken from tooth cavities are almost invariably positive. And why not? Where could you find a more nearly ideal incubator for bacteria in nature,—pabulum from decaying tooth structure and food remnants, body heat, and comparative freedom from disturbance. Cook found tubercle bacilli in 171 mouths out of 200 examined, and Moorehead in the Journal American Medical Association reports five cases of tubercular glands in proximity to fistulous first molars, the inference being obvious that the bacilli had entered the system by this channel.

We are constantly striving to prevent adulteration and contamination of food products, but is it not rather useless to provide pure milk, pure water and pure food if they are to be contaminated, before they can reach the stomach, in the unclean mouths through which they pass.

Still another problem difficult of solution is that of ventilating school rooms. Why not remove the greatest cause contributory to foul air,—insanitary conditions in the children's mouths.

To provide funds for carrying on this work may seem, for the time being, like taking money from one pocket and putting it into another, but it will eventually, without a particle of doubt, be one of the greatest economies to be effected.

The time is ripe right here in Chicago to begin this economy. The movement to date has been carried by the dental profession; the dispensaries equipped with funds acquired by them; dispensaries manned by volunteers and the children examined by volunteers—all faithful workers for an ideal.

Now, there has been incorporated in the estimate for the Health Department appropriation for next year, provision for hourly compensation for the dentists in the service, provision for equipment, for additional dispensaries, and the running expenses of those in operation.

Whether or not this is passed depends in a very great measure upon ourselves. The Department of Health favors the work, the Board of Education favors it, but the Council is the body that apportions the funds. Therefore, it is up to everyone of you to hunt up his local councilman, tell him what we have done, what we want to do, what we can do if given opportunity, and convince him of the soundness of our propaganda and the genuine interest of the profession as a whole in this work of health conservation.

It is possible that we may not gain our point this year. It took several years of trying to establish medical inspection on even the underpaid basis it now stands. But in the end they got it and in getting it made it easier for us to accomplish our desire. Medical inspection has demonstrated its true worth; we are demonstrating the value of ours.

Therefore, gentlemen, let us keep our shoulders to the wheel for humanity, for our city and our profession.

Dr. John S. Marshall, San Francisco, Cal., was asked to take part in the discussion. Dr. Marshall said:

I came here tonight for the purpose of listening to this paper and the discussion of it, and not to take part in the proceedings, and I am sorry you called upon me.

I want to compliment my friend, Dr. Hunt, by saying to him that this is the best exposition of the subject of oral hygiene that it has been my privilege to listen to or to read anywhere. I had hoped, however, he would touch upon one phase of the subject in the way of caution which he did not do, and I am going to make that as an addition to his paper. I have heard individuals talk about the commercial side of this problem and, ladies and gentlemen, I should say if that is persisted in it will ruin the cause. The question of what we can get out of it should be buried out of sight and never mentioned again. I was talking with a professor in a dental school not long ago and he said this movement would help the schools immensely because, he said, there will be so much more dental service required that our schools are going to be full. That man was looking at it from the commercial side and from the standpoint of what his school could make out of it. I saw in one of our dental journals the argument advanced that it was going to increase the amount of dental service required all over the country and would be a great advantage to the dentists generally. Such a thing as that will jeopardize the whole movement if it is carried on. It ought to be buried out of sight. This movement should be an altruistic one. We are working for the benefit of the future citizens of this country. We want them to be physically perfect, and if they are physically perfect they will be mentally perfect. If we are mentally perfect, we will be morally perfect, and so you see where it leads to.

DR. C. N. JOHNSON:

There are just two things connected with this paper that I want to refer to briefly. One was the statement that in order to get action on a question of this kind we should be obliged to educate the children. That is true. An impression is made upon the people through the children that cannot be made in any other way.

Mention was also made of the women's clubs, and I want to say that you can reach the children quicker through the women's clubs than you can through any other one agency. If the mothers of the country become interested in this question of oral hygiene, then oral hygiene is solved. That has been demonstrated by bringing this matter before women's clubs in different parts of the country, and I believe that that is one of the most potent factors in making an impression which will amount to something so far as results are concerned.

Dr. Hunt said something in regard to free clinics that I want to refer to. Reference has been made to it by Dr. Gallie, and I think by Dr. Bentley. It is true that this is a civic question, but, ladies and gentlemen, you cannot impress any state or city officials until you have demonstrated to them that this movement is a civic economy. You cannot appeal to people on the basis of philanthropy; you must prove to them that the care of children's teeth and of the mouth means to them or to the community a saving in dollars and cents. The only way I know we can do that is to demonstrate it, and the only way we can demonstrate it in a public way is by the free clinic, and it was upon that basis that I favored the establishment of free clinics in this city. And I want to say in this connection that I am not in favor of starting more clinics at present, although I have been importuned as chairman of the Public Service Commission of this society to do so on many occasions, on the ground that there was a demand for them, and I kept the number of clinics down as best I could, simply for the reason that I wanted to be perfectly sure that the free clinic would be maintained on a permanent basis, not that it should be a temporary affair with a few dental chairs for sale after a while. One of the gentlemen who was approached to make contributions to the finances of this movement said, What we want is continuous performance. Dr. Evans, as commissioner of health, exerted more power in this direction than any other man connected with it, and we feel that a start has been made along the right line to get proper service for the children of Chicago. The establishment in this city of a dentist as one of the members of the Board of Health was a triumph for Dr. Evans. As Dr. Gallie has told you, we want to get appropriations for the maintenance of these clinics, and just as soon as we get an appropriation of that kind through the council then we shall feel that we can throw some of this load or responsibility upon the state or city. But we have difficulties there to contend with that the average citizen has no conception of. We are likely to encounter opposition in trying to secure appropriations from the council for this work. Dr. Hunt says we must make it a matter of state supervision and of legislation, and Dr. Bentley answered him when he said you cannot get legislation till you create public sentiment, and that is what we are doing today. We are not expecting to take care of the children of this country on our behalf all of our lives; we are expecting to place this matter in its proper relation as a civic duty, and to this end we must work.

I want to pay my personal compliment to the essayist for his magnificent paper. It is an inspiration to every one of us. It has come to me at a time when I needed it, because there are discouragements in this work, and yet I believe that if we get the spirit of Chicago behind this movement it cannot stop, and I am more of an optimist tonight than many of my friends—much more so than the essayist or any of the other speakers—with regard to the outcome of this work. I want to say to you, ladies and gentlemen, that this movement will become an established fact and many of us who are here may live to see it. We do not need a lifetime to bring about a revolution of this kind. If we demonstrate that it is a civic economy I believe this movement will receive its full fruition long before we are all dead.

Dr. W. H. G. Logan:

We have been listening for a long time about the need of this work, and what I came here tonight for was to learn something about *how* to do it. For the period of fifteen or sixteen years I have been in the dental profession we have been talking about the need of it. The need of this movement has long been recognized, and tonight we have been told something about *how* to do it. It was the *how* part of the paper that impressed me most favorably. Furthermore, the thought was brought out that we must get the medical profession behind us, for when we deliver a message to the public the public will turn and ask the family doctor, "Is there anything in this thing that the dentist is talking about?" Unless he says yes, you are lost—absolutely lost. Therefore, the Public Service Commission of the State of Illinois has caused to have in every dental society in this state a physician that has been recommended by the medical society, not chosen by the dental profession, for fear the dentists would choose their office mates; but the invitation has been sent to the medical society in the district where the dental society holds its meeting, and the officers of the medical society have recommended a man suitable to go before the dental society and give a lecture or paper upon this subject: "A Discussion of the Influences that Diseased Conditions of the Mouth, Nose and Throat Have Upon the Individual's Welfare and a Consideration of Their Relation to the Community's Health."

This was done for two reasons. First, that the medical man would look into this thing in a serious way, knowing if he did so he would find the relation, and if he found the relation he would tell it to his fellow practitioners of medicine, and we, as dentists, would learn what he had found out in looking into the subject. So all over this state that subject is being discussed by competent men.

A week ago tonight—in the afternoon in Urbana, Ill.,—an excellent paper was read on this subject by a distinguished local practitioner. In the evening Dr. C. N. Johnson gave an address in a church that seats one thousand people. It is not an easy thing to get an audience to listen to how to keep well, but we got an audience there, and for the purpose of letting it go into the proceedings of this meeting I will say something of how this audience was secured. I will mention the one central thing that brought such a large audience together. We secured 250 children to go and sing at the opening of the meeting. Now, when you get 250 children, you get the parents and some of the brothers and sisters. That helps to fill the amphitheater. We sent two letters to every physician in the City of Urbana and the City of Champaign. We likewise sent two letters to every clergyman in these cities, two letters to every officer of a woman's club; we sent letters to the senator and representative and congressman. And why? Because by and by, after we teach the public the need of this thing, we are going down to Springfield; we are going to Washington; to ask for proper legislation, and that is the reason we sent these letters to the law-makers. First, we tried to create public opinion, and we wanted the law-maker there because we are going to the law-makers to ask for proper laws. That, to my mind, is the way to proceed—create public opinion first. I would advise you to get the children there. We have had one meeting and did not get the children present. We invited them, but they did not come. When you let them take part in a thing they are with you. We failed in Urbana in one way because we lost some of the children before the meeting was over. They went home. Next time we will not be fooled that way. Next time we will have them sing before we start and after we are through. Before the year is over many district societies in the State of Illinois will have had joint meetings with the public. These people will receive these letters to attend these meetings; there will be speakers to talk to them, and then by and by we will do what Dr. Hunt says we should do, namely, go to the legislators and tell them what the people want.

Dr. George W. Cook:

I have nothing special to say with reference to this admirable paper, although I am very much interested in the subject. A few weeks ago in going to Valparaiso, Indiana, I heard of one of the finest pieces of work that I have known in regard to the inspection of the children in the public schools, particularly the care of the teeth and the condition of the mouths of these children, and I learn that there is a member of the Board of Health of that city in the hall this evening—a gentleman who cleaned up an epidemic of scarlet fever which had been persisting for a considerable time in that town. It is to be hoped he will tell us something about it. I would like him to tell us about these cases of scarlet fever and how he cleaned them up by house to house examination, noting the conditions that existed and correcting them. When there were so many cases of scarlet fever in Valparaiso, Dr. Nesbit, who is here this evening, felt that something must be done in order to stop these persistent cases and to get after the so-called infectious carriers that were in the schools.

I am very glad that I examined this work in Valparaiso, and I am gratified that the author of this work is here with us this evening, and I am going to give way to Dr. Nesbit.

Dr. Otis B. Nesbit, Valparaiso, Indiana:

It embarrasses me very much to be called upon in this way and to be slandered by Dr. Cook. (Laughter.) I came up here to hear the paper of Dr. Hunt and the other men who were on the program to discuss it, at the invitation of one of your live members, who has had a leading part in the work at Valparaiso—Dr. Max Ruge. Our train was late and we missed Dr. Hunt's address. I know it was a good one, because I went to Indianapolis and heard a good paper from him on a similar subject. I felt amply repaid for that trip because it gave me inspiration and ideas to take home with me to our little city.

In regard to the number of cases of scarlet fever we had in Valparaiso, I will simply say that I was a sort of an honorary member of the Board of Health. It was not my duty to look after the enforcement of quarantine and to take care of cases of contagious diseases. But we had had three and a half years of scarlet fever and it was time to find out the cause of the spread of this disease and if possible to prevent it. I took the initiative in interesting the local medical society to see what was necessary to rid the community of scarlet fever. The society drew up and passed resolutions covering every phase of the question and gave a plan of terminating the epidemic. Then the local Board of Health adopted these regulations as its rules and we proceeded to put them into execution. Before this was done I made a quiet investigation and found that fifty cases of scarlet fever had occurred since the opening of the schools in September.

We instituted free medical school inspection without any expense to the board. The medical society did this, and we were just sixteen days in cleaning it up out of the schools. After that time no more cases of scarlet fever developed in the schools, nor could any that developed subsequently be charged to the schools. We instituted six weeks' quarantine and after the first six weeks' quarantine had elapsed we had only four cases of the disease in town, and two of these probably came from bad teeth. From that time on the rest of the cases had their teeth filled before or immediately after the release from quarantine. I do not remember the number of cases we had in the schools up to this time, but school inspection proved a very useful thing. We had a little trouble with two families, but the general public was in a good humor and the members of the school board gave us every support. One of the members of your profession, Dr. J. R. Pagin, happened to be on the school board, and was very much interested in dental inspection of the school children. We have three school buildings. We examined the children of the third and fifth grade. In these grades we found fifty children who had had scarlet fever, and we found that they had on an average five cavities per head. A more recent examination revealed that of the 195 children who had had scarlet fever with nearly 900 cavities and there were only eight who had no cavities. I believe there is a distinct relation between this condition of the teeth and the spread of respiratory diseases. Practically all of our so-called contagious diseases are without doubt respiratory infections.

I must say a word or two about dental inspection. This year the people like dental inspection so well that the boys (the dentists) were called together and said "we will do anything you say." "All right," I replied, "we will examine the eight grades in the schools." When this was finished we got together, ran over what we had done, and decided to finish up the entire schools by examining the kindergarten and the high school. We have made complete dental examinations of all pupils in the Valparaiso schools. The dentists have done this work kindly, without any complaint. We have sent charts of their teeth, showing defective ones, both temporary and permanent, with a notice to the parents calling attention to the condition and asking the parents to co-operate with us. We examined 190 children last May. Of that number in the re-examination we found seventy of them showed wonderful improvement, which amounted to this: There were 100 less cavities in the permanent teeth; 138

less cavities in the same children; at that time there were only eight with no cavities in the permanent teeth out of 70 children that were examined, and they came back into school with forty-six with no cavities in the permanent teeth. These cards were sent out two weeks before the school closed. Two teachers sent 33 1/3 per cent of their pupils to the office of dentists for dental attention in that two weeks. I called the teachers together before I sent out any cards this fall. I showed the teachers what had been accomplished. It was shown that thirty-six per cent of the children examined last May had received dental attention. The teachers were the ones who did the bulk of the work. I asked them whether they were willing to continue the work, and they said yes. Shall we send out cards this year? Shall we undertake an educational campaign and carry the work on this year? They said yes. I sprang a surprise on them. I had a chart showing what had been done in every room in the different grades and what the results had been. About this time they began to sit up and take notice, because they could see we were keeping tab of every teacher's work. As the result of calling that meeting of teachers we have thirty teachers in our schools who are preaching and teaching oral hygiene every week. They are making an effort to get a tooth brush in the hands of every child, and the children are taught how to use the tooth brush. By the way, we are educating some of the dentists. (Laughter.)

You have talked here about the education of dentists and the education of doctors. I want to say this, that if you want to educate the dentists and doctors, go into the public school and educate them up to where they belong by educating the children what to expect and demand of them. The dentist from now on who does not clean teeth properly and educate his patients how to clean them so that his dental work will stay in the mouth when it is put there, is neither a scientific nor modern dentist. Dentistry is no longer a mechanical job, but a scientific job. It is a hygienic job. It is a preventive medicine job, and the physician or dentist who does not take that position will get run over by the educated children who will not seek his services.

These are all preventive medicine questions. They are simply habit-forming principles. You cannot teach old dogs new tricks. You can go into the schools and teach children right habits quickly and the old fellows will catch on to some of them.

Dr. John A. Stoeckley, South Bend, Indiana:

My principal reason for coming here to attend this meeting was to learn from Dr. Hunt and from the members of the Chicago Dental Society more about this work, so that I may be able to carry it on in my own town and county more intelligently, and give more instructions to the laity concerning this movement.

Dr. Hunt said that we should interest the physicians. Unfortunately our physicians are not all like Dr. Nesbit. If they were the work would be comparatively easy. Physicians consider us a sort of side issue, and it is hard for us to break in. My idea is for some of the leading members of our large societies and for Dr. Hunt as the editor of *Oral Hygiene,* to solve the question of how we are going to break in with the physicians into their societies, how to make them take an active part in this work and be on an equal footing with them. In this connection Dr. Gallie brought up one thought which was very pertinent, namely, for us to join the medical society. Until we do that we are going to have a hard time to get physicians to tell their patients that it is important, when they ask them what is there in this dental agitation? and we will not get physicians to do that until we get into their societies and get an equal footing with them.

Another good way to get the co-operation of the physicians would be to have such a paper as Dr. Hunt's read and discussed by men of prominence before the local medical society, and I would suggest that the program committee of the dental society call on the secretary and president of the medical society and say to them, "We want to read a paper on oral hygiene before your society," and induce them to put you on the program to read that paper, and until that is done I do not believe we will get their entire support. Again, we should have physicians contribute papers to our local dental societies on this subject; and when that is done I think we will be able to receive their co-operation in full. We should also insist when a talk is to be given on medical and dental inspection that the dental standpoint receive its full quota of attention, both in the newspapers and from the platform. Even our own Dr. Hurty, whom we prize so highly, and who is connected with the Indiana Dental College, and who is closer to the dental men than any one else, does not make that forcible enough. He does not bring the vital dental points before the laity strong enough with regard to this movement. We all know that dentistry is a part of medicine, and every time you say medical inspection you mean dental inspection, but the laity do not understand this. When our newspapers talk about medical inspection or anything of that nature, the laity does not know but what you are talking about medical inspection only. We had Dr. Evans with us, who gave a talk on medical inspection, and it was very interesting and the dental side received its full attention, but if the articles in the newspapers would say medical and dental inspection of the children in schools, it would be twice as beneficial. We had Dr. Hurty talk to us and he spoke of the same thing, namely, medical inspection, and in spite of the fact that we know that dental inspection is included, the laity do not know it. I know this from the fact of having made several talks myself before different clubs of that kind. I have had opportunities of addressing organizations of ladies, and not later than a week ago, after I got through addressing a ladies' club, one of the ladies spoke to me and said, "This is the only time we have had a talk on dental inspection," and nobody among the laity seems to think the dental part of medical inspection is of any importance. They think that all the medical inspection means is to determine whether a patient has adenoids, diphtheria, or tuberculosis, and they do not seem to think it refers to cleanliness of the mouth.

I have read the article by Dr. Nesbit in the laity issue of the *Oral Hygiene* and quoted from it in my talk to the Parent Teachers' Club of South Bend concerning epidemics of scarlet fever, and it had more effect than anything else I could have said. I pointed out very clearly and quoted from that article that it was possible by oral inspection to check the progress of scarlet fever that had been going on for years.

DR. OTIS B. NESBIT, Valparaiso, Indiana:

I want to say a word more about this educational work and what we did there. Dr. Cook happened in our town two or three days after we had sent out a thousand cards, and I sent the newspaper boys to him for an interview with reference to the care of the teeth, and they published a column. It could not have been better if it had been ordered. It was the very stuff we wanted.

I have another observation with regard to the kindergarten pupils. We have thirty-three and one-third per cent of our children with good teeth—no cavities—in four and five and six-year-old children in the kindergarten. In the first grade school we have ninety-five per cent with diseased teeth. I am wondering what dentists find in other places in regard to that.

I am sorry that I missed such a good paper as that which has been read by Dr. Hunt because I think he would have enlightened me on what I am wondering about. I have wondered if some of the children did not go to school without infection and got it after they got there? And then another observation in regard to the kindergarten class, and it is this: practically all of these children without cavities are the oldest children in the family, or those that are not the oldest come from homes where children about them have good teeth, and these children in the kindergarten who have bad teeth have older brothers and sisters at home or who attend school, and they *all have bad teeth.*

Dr. Cook:

I would like to ask Dr. Nesbit the result of his examinations of the high school children after I was there?

Dr. Nesbit:

We found that the high school children had the largest percentage of pupils with diseased teeth of any grade—95.4 per cent. This represents all of the permanent teeth, and of 156 who were examined there were only eight without cavities, and there was only one pupil in the high school who has never had a filling and has no cavities. This young lady took the greatest care of her teeth. We saw her mouth, and we were told that she scrubbed her teeth with a clean cloth. That had been her practice of cleansing her mouth and keeping her teeth in such excellent condition.

Dr. Hunt (closing the discussion):

The discussion has been so free and so thorough that there is nothing more for me to say. However, there are one or two points in connection with the discussion which, it seems to me, indicate that the speakers did not catch my meaning exactly as I had it in my own mind, but they are trivial. I think we have done good work among the school children. I have been lecturing on oral hygiene three times a week for the past year except through the holiday months in summertime. I have lectured before a great many of the school children, a great many of the mothers' clubs, and have done some public lecturing in Indianapolis and other cities.

There was one point Dr. Johnson emphasized which I can agree with to a certain extent, and then we have to part, and that is as to the value of this work that is done among mothers' clubs. I do not depreciate the value of that work, it is a great work, but what is the use to tell a mother what she should do for her child when she cannot afford to spend five cents to buy a tooth brush for it. I lectured last week in one school, and after I got through I was talking with the principal of the school, a very fine woman, and she said to me, "Doctor, your talk was beautiful. It was so good of you to come here and talk to the children; but I am wondering what they are going to do after what you have said. One of our girls came to school this morning without any breakfast, and she would not have had any dinner except her mother borrowed ten cents from a neighbor."

If we go before that class of children and talk to them about oral hygiene, it seems to me, we have nothing definite to offer them. I say, God speed the day when we will have these free clinics, but we will never have them, in my opinion, on a permanent basis until we get the state to take them over.

ST. LOUIS DENTAL COCIETY, JUNE 6, 1911.

DISCUSSION OF THE PAPER BY DR. HAGEMANN ON "PROFESSIONAL OPPORTUNITY."

DR. HAVERSTICK:

I wish to congratulate Dr. Hagemann on the competent manner in which he handled his subject. It gave me great pleasure, and I am sure proved interesting to all. Professional opportunity is one that comes to every man who seeks, and will come from his perfect service in his chosen work.

DR. W. L. O'NEIL:

I wish to congratulate Dr. Hagemann on his most excellent and interesting paper. I agree with the essayist in practically all he has said, but I want to say:

First, we must qualify ourselves, then render services to the very best of our ability. This is good but not sufficient. For it is absolutely necessary that we keep up this qualifying process so that we are at present, and at any time in the future able to render service, not only to the best of our ability, but to the very best of our professional ability. And to be able to accomplish this we must read, belong to the dental societies and attend their meetings. Anyone following out this qualifying process will surely succeed.

Dr. J. F. Alcorn:

Mr. President, Dr. Hagemann, and members of the St. Louis Dental Society:

The precedent has been established in, that I should say a few words of praise for the paper we have heard and its writer; that it is good and well written and well worth your time spent at its delivery.

In this instance the precedent serves true. I am not spending idle praise, sirs, when I say, the profession has an opportunity in this brother, a hard working, honest-thinking and kind-hearted leader. It is good for any association to tie to a man that can prove capable of doing things in the short space of time our friend has worked with such an association.

Going to his paper he says, "Dentistry, as you know, is one of the youngest of the professions and can be likened unto the growing youth." Very true. The profession of dentistry is growing rapidly, so rapid that for the man who has attained his degree in years gone by, it means a constant grasping and a spending of energy for new and beneficial knowledge. To get into, "The rut of yesterday," as the essayist has said is a deplorable condition for a participant in this speedily developing calling of ours. To shut oneself away from his fellows and drag out years in an office from early to late will serve to only atrophy a mind and skill that would naturally develop from absorption of new ideas and the dust rubbed off the elbows of our co-workers.

Our field is expanding. Dentistry of now is to dentistry of the past as the tungsten is to the candle. Unheard of ideas of immense value to us are promulgated each day. And so, sirs, one of the best opportunities our profession has had and has so wisely seized today is coalition. Remember the bundle of sticks, how strong they are when united. But there is more than strength in our union, it elevates; it serves as a polish to minds easily tarnished. Here, if you please, at these meetings, at the frat meetings, the clinics, dental clubs and the charity hospitals; anywhere that dentists congregate is an opportunity for both the young man and the old to better himself in skill and broaden his mind to meet the advancements of the time.

I have heard it said here that it is generally the men attending society meetings that stand in the front rank. To be sure an individual with some degree of intelligence, in a society of intelligent men, can always absorb and it is the only way, with the addition of our dental journals, of keeping step with this swiftly moving profession. To me it is an opportunity.

DR. WM. CONRAD:

Among the better class of patients, the decaying of teeth is not so prolific as it was thirty years ago, and today we know it is unnecessary. Many years ago a very distinguished and conscientious dentist commenced the subject of original research. He made the statement that there was no such thing as hard and soft teeth. Gentlemen, I agree with him now. The subject of early dental hygiene should be followed out. The public should be educated up to this. We must demand it of our patients.

DR. J. EMMETT NORTHCUTT:

I desire to congratulate Dr. Hagemann on his very able paper. We all knew we would hear a good paper when the name of the essayist was given us. I think the Doctor deserves great credit for his efforts, as he is only a babe in his profession, but he has clearly shown us that he is a full grown man when there is a task for him to perform.

In discussing this paper there is indeed very little that I can say, and possibly nothing to strengthen what has been said. The Doctor was most assuredly correct when he says that success is dependent on the individual and his qualifications, but enough hustle and gall, will in common language make a success of almost any individual, as I believe it is plain by good authority that ninety per cent of all successful men achieve their success by hustling and using their nerve. To be wide awake is a most important essential in any line of work, and I think you will find that any man who has hustle and gall in his make-up is a close observer.

The choosing of one's life work is indeed all-important and one in which the parent can render great assistance, although I fear many parents give this no thought, and many more try to make out of their children the impossible, and this in large measure is accountable for the very great percentage of failures in life. In regard to the tyranny of yesterday, I think a man cannot keep his mind in a too receptive mood for the very constant advancement of our profession.

Dr. Hagemann certainly voices my sentiments when he says we have thoroughly competent men in our city. We have them, and in goodly numbers. Why such men as we have are so modest is a painful mystery, they seem content to deliver the goods and let the other fellow reap the rewards. Let us each and every one awake from our peaceful slumbers and place our beloved profession where we all realize it should be, at the top. We have a great profession, a great city in which to develop, and great men to do the developing.

Dr. J. F. Austin:

I enjoyed Dr. Hagemann's paper very much, and I think if we would follow out some of the lines he has drawn for us, it would make each and every one of us better men in our profession.

Success and how to attain it; Dr. Hagemann said there was no set formula by which we may attain success, and I somewhat disagree with Dr. Hagemann in this statement. I believe success is only obtained by a certain formula, and that formula is work, hard work. In order to obtain success in our chosen profession, we must at all times apply ourselves, we must be dignified in the office, and must always be there. The young man starting out in his profession who expects that he can close his office when a social engagement comes up will certainly not make a success of dentistry, or in any other work. In choosing life's work it is all well enough to say that these things come to us in our cradle, but there is many a man who would make a success of himself if it would be possible for him to follow the business or profession he might desire, but it is not convenient or possible, simply because his surroundings will not allow of choosing his profession; his lot is thrown on him, and he has to do the best he can. I agree with Dr. Hagemann that every man should have reserve force, and I believe that any man who will work at our profession and not take recreation will have mishaps in his work. A man cannot stand the grind of working at his chair from eight to six every day in the week and be able to compete with things that will come up in his daily life.

As to power of convictions, I believe any man who is worth anything and who makes a success is bound to have his own convictions to live up to.

Dr. Hermann Prinz:

It affords me great pleasure that I have been called on to discuss this maiden speech of Dr. Hagemann, and it seems to me, that it is far above what maiden speeches usually are.

It has been said of dentistry that too much has been written about it, and, unfortunately a lot of chaff has been written, which should be kept out of the journals, because the practitioner will not take time to read it. It has also been said that dentistry has been over-crowded. As a matter of fact in 1909 and 1910 there were about 1,000 less graduates than in the preceding year, and next year there will be about 500 less than this year. If this question of dental hygiene should take on some perfect footing, then the supply of dentists as we have them today is by far inefficient in ratio to the needs of the masses. There are more advantages in dentistry today than in any other profession. For instance in medicine, it takes years and years of hard labor to become proficient in a single branch, because almost every subject you touch upon is worked out.

Dentistry offers an unlimited field of opportunities for research work. This is not only true of its scientific phase but also of its so-called practical branches. For instance, in mechanical dentistry the investment of rubber plates in plaster of paris is a poor method as compared to a metal investment, yet since its introduction no improvement has been made. Again, in the filling of root canals; outside of some few test fillings and clinical work real scientific research covering the entire field in this connection has not been touched upon. And so it is with almost every other branch of our profession. Within recent years a new stimulus has taken hold of the profession, especially in regards to investigation into the causes of dental diseases, and it is to be hoped some good things will be accomplished.

Dr. Hagemann (closing):

I want to thank the gentlemen who were kind enough to discuss my paper. Dr. Austin, I believe made some remark about restrictions in choosing one's life work; one cannot always choose the right calling first. I believe it is said of P. T. Barnum that he made fourteen failures before he went into the show business, and in that line he has proven himself a great success, so if you do not succeed at one thing, try something else.

Dr. Northcutt refers to Nerve and Gall; I consider his remarks very good.

Dr. Conrad's remarks I enjoyed very much.

AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT DRESDEN, JULY 1, 1911.

DISCUSSION OF THE PAPER BY DR. THEO. VON BEUST ON "THE STUDY OF THE MICROORGANISMS OF THE HUMAN MOUTH."

Dr. Kirk said he wished to say a few words on Dr. Von Beust's paper, not because he felt he knew anything particular about the subject in an expert way, but because his friend the doctor had asked him to say something on the subject, and there were a few items in the paper that had appealed to him very forcibly. The keynote of the paper was that of revision of classification of mouth bacteria. In a desire to arrive at the truth—and by the truth he meant that which could be utilized in practice—men were inclined to jump at conclusions, and all along, in the development of bacterial work, when a truth which had a more or less circumscribed application was announced, it was said, "Lo, a prophet has arisen." The work of Rottenstein was valuable work, but it did not deal with what was possible, but with what was made possible by the enunciation of that great man Koch, with reference to bacteriological work; it lacked the point of demonstration in reference to the causation of dental decay. It was from that point that Dr. Miller took up the question, and basing himself on the work of his predecessors demonstrated that particular bacteria produced a particular result. In the study of the microbic flora of the mouth and its relation to disease, the point to be borne in mind was the necessity that Koch laid down that it must be possible to produce the disease before it could be said that a certain organism was the cause of the pathological reaction. Bacteriologists had been too ready, it seemed to him, to adopt classifications of bacteria upon their reactions to staining methods and so on. He thought it was still an open question whether a classification could be made of bacteria based upon their reactions to certain specific staining methods. He called attention to a word that had become very current in connection with bacteriological study, "uncultivable bacteria," which simply meant that it had not been possible, up to date, successfully to cultivate them in the laboratory, and that meant that all the conditions necessary to the life cycle of the bacteria had not been discovered. Bacteria were very sensitive to the reactions in which they grew, and some slight change of conditions, or change in the pabulum, might solve the question whether a specific bacterium was a cultivable bacterium or an uncultivable one. So also with reference to those that might not be seen with the microscope. When men spoke of invisible bacteria they meant that with the present optical apparatus there were undoubtedly large varieties of bacteria that were not visible. But who could say that in the near future there might not be some other method of optical research, by which bacteria now classified as invisible might become visible? With respect to the question of pleomorphism, that was one of the root points in bacteriology, and he felt it was an impertinence on his part to refer to it, but he wanted to say from the standpoint of a layman in bacteriology that the appeal which had been made by Williams and the essayist and others, the argument which they brought to bear with reference to the possibility of pleomorphism with respect to certain bacterial forms, seemed to be most cogent and weighty, and practically unanswerable; but he would again raise the danger signal with reference to making a broad generalization upon that fact. Because one bacterial form was pleomorphic it should not be said that all bacteria were pleomorphic. The unicellular organisms were the most plastic life units that responded most readily to those conditions which produced evolutionary development. In thinking of evolution, one was inclined to think of its applying to the organisms as a whole; man had evolved through himself, and it was to the individual cell one had to look for the facts of evolution. Evolution first manifested itself in the individual cell, and there were many instances of changes in environment affecting the morphology as well as the function of cells, and there was no good philosophical reason why there should not be such a thing as pleomorphism manifested in the mouth forms. He simply wanted to raise a finger of warning against making it generally applicable to all the organisms in the mouth. The fact that there were a variety of disorders that were specific in character, that had a definitely marked clinical picture in their expression, was sufficient evidence that there were different types of bacteria that were the etiological factors in the production of those diseases. Finally, he desired to support as strongly as possible the plea that the essayist had made for a more thorough and careful study of the question. As Dr. Jenkins had said in his paper on hygiene, the questions which might seem dry and complex were the foundation questions to be solved before there could be any intelligent hygiene or therapeutics.

Dr. Von Beust said he desired no classification based on staining reactions, and as certain organisms could not be cultivated the only alternative was to study the tooth slime itself, and that had to be approached in every imaginable way. He did not himself believe that bacteria were pleomorphic, and it was a theory that was not generally accepted. A new classification was certainly needed. Miller merely mentioned different forms, but he had not described a simple microorganism in a bacteriological sense. If the pleomorphism of only one form was taken, it would prove the fallacy of the whole classification of Miller's. In the text books, Vincentini was criticised, but he had never been studied, and that was a blot upon the profession.

DISCUSSION OF THE PAPER BY DR. BOGUE ON "THE RELATION OF THE TEMPORARY TEETH TO THE PERMANENT TEETH.

Dr. W. S. Davenport, Paris,

said he was not prepared to discuss the important work of Dr. Bogue, but during his work on orthodontia in Paris he had often had the opportunity of seeing many cases that had been done by Dr. Bogue, and also had had an opportunity of presenting before the American Dental Club of Paris many of the ideas Dr. Bogue had adopted in connection with orthodontia. He thought the members of the American Dental Club would agree with him that Dr. Bogue had made out his case as to the great necessity of regulating the teeth of the young, and he thought that really Dr. Bogue had revolutionized the art of regulating teeth during the last few years. He had taught that, by regulating the teeth of very young children, secondary irregularities could be prevented, and also how much more easily such regulation could be done in the early days of childhood. A few days ago he was asked to present a few models to the School of Stomatology in Paris, and, in looking over his records for that purpose, he found models that were sent to him years ago by Dr. Bogue, showing irregularities in the teeth of babies. He had had the opportunity of observing the wonderful thoroughness of Dr. Bogue's treatment, and he considered the Doctor to be one of the greatest teachers in modern orthodontia. Dr. Bogue was not only enthusiastic about his own work but about the work of other practitioners also, and certainly all that was best in regulation had come from Dr. Bogue.

Dr. G. A. Roussel, Paris,
said, like Dr. Davenport, he had seen many cases done by Dr. Bogue in children, and he thought the work was wonderful. In his own practice he had two young ladies who had been treated by Dr. Bogue when they were quite young for narrowing of the arch, and the teeth were now all in place. The work was done about ten years ago, and by the expansion of the arch Dr. Bogue had really done what could not be done with other systems at any age.

Dr. W. S. Davenport
said the models of the young girl he had referred to were now placed in the Museum in Paris, the models showing the history from the time the teeth erupted until the correction.

Dr. E. D. Barrows, Berlin,
said one of the things about the paper that interested him very much was that Dr. Bogue began with his patients at four years of age, and he should like to know how many ordinary practitioners were able to foretell there would be any irregularity. He himself had begun regulations within two or three years, but according to Dr. Bogue it was necessary to begin even earlier.

Dr. F. F. Robinson, Paris,
said the paper had been quite a treat to listen to, and he agreed with Dr. Barrows in a great measure as to the almost impossibility of conjecturing what would be the natural growth of the patient in the coming years. It seemed to him quite evident that the child's jaw at the age of seven was comparatively much more important than the bones of the face itself. A child at seven or eight might have enormous teeth, and those teeth very crowded, but after a certain length of time nature stepped in and the jaw was increased to such an extent that what appeared at first to be too large finally became absolutely normal and natural. Furthermore, he wished to know exactly how it was possible to conjecture whether a boy or girl with a relatively steep oval head would not

have at 12, 13 or 14 years of age, a dental arch which would be in conformity with the lines of the features. Another factor that ought to play a great part and required careful study, was the rule of heredity. When in Madrid he went through the marvellous museum there and was absolutely struck by the similarity of the features of the great King Philip with the present King of Spain. In both there was the same pronounced jaw and the same Hapsburg lip, although there were three or four centuries between the two kings. It was well known that heredity would carry on from generation to generation the same traits, but in China, where all the girls from an early age had their feet so contracted that at 18 they were incapable of walking, there was no record of any child being born with feet other than in a perfectly natural condition. Also, amongst the Israelites from time immemorial circumcision had been practiced, but there was no evidence of any Jewish child having been born circumcized. The teeth had remained the same ever since man had existed, and yet at the same time Nature was beginning to do away, little by little, with the wisdom teeth, which were being crowded out, and in many cases there were no laterals. Therefore he thought heredity and Nature were two factors with which Dr. Bogue had to count. He was speaking as a layman, as one not at all capable of giving an opinion on the subject, and yet as a man who was desirous of learning something on the subject, and mentioning matters which would strike the ordinary individual practicing dentistry.

Dr. N. C. Smith

said he disliked the word "orthodontia" and despised the practice of orthodontia. It was simply repair work, a cobbler's job; it was simply trying to do something to remedy what, as professional men, they should prevent. He was looking forward to the time at no distant date when orthodontia would be a practice of the past. When dentists did their full duty to their patients there would not be so many specialists of the nose or the eyes or the ears. When the young patients were given proper functional nasal breathing there would not be so many complications of the ears and the nose. He once listened to a very able paper read by an American before the British Medical Association, in which he described thirteen operations in children, sub-mucous sections on the septum of the nose to improve the breathing. Had he himself been in authority he should have given that man a year behind the bars for every case he had operated upon. In every case a proper dentist, by widening the arch, could have relieved that patient without leaving any scar tissue. The practice of orthodontia differed with different men. Dr. Bogue, who practised amongst the millionaires of New York, and the members of the Society who practised amongst the crowned heads of Europe, followed a different procedure from the ordinary practitioner. He himself was practising dentistry amongst workingmen, and had to see a vast number of patients, and he believed in doing the most good for the greatest number of people possible. It was impossible for him to specialize and give the time that Dr. Bogue gave to the work. If he could widen the arch sufficiently to give good nasal breathing and a clear air passage he considered he was doing the best he possibly could. Also, the ordinary practitioner endeavored to look after the stomach, because unless there was good nasal breathing there was bound to be a bad stomach. If the nose was not open the bacteria of the mouth would increase, and sooner or later there would be infection of the stomach. Some medical men had gone so far as to say they believed the greater number of the ulcers of the mucous membrane of the stomach were due to infection from the mouth, and he believed they were right. His own experience had been opposite to that of Dr. Bogue. When he first began the practice of orthodontia twenty years ago he sent his small patients to the family physician, and invariably the answer from the physician was unsatisfactory. Then he rolled up his sleeves and did the work himself. He had to know that adenoids were cleaned out of a throat before he would try to widen the arch. He had changed his practice of orthodontia considerably in the last twenty years. At first he removed tonsils and adenoids, but after a little while he began to think he was doing wrong. There was no need to remove a tonsil if it was only hypertrophied; if it was not infected by some virulent micro-organisms it was not necessary to remove it. He had come to the conclusion that there was a positive relation between rickets and the development of the teeth, and he was also convinced there was a relation between cretinism and the teeth, and also a positive relation between diseases of the pituitary body and the teeth. Dentists would have to get at the work earlier; they might have to go back to the parents or the grandparents. If it had been possible to get back to the old King Philip I and correct his adenoids and establish good breathing there was no doubt a better physique would have been established in the Spanish royal family today, and the present King might have been saved all the trouble he had undergone in the removal of adenoids, the treatment of his ears, etc. Another thing that had not yet been thoroughly studied was the question of the ductless glands of the body having control of the bony growth. As soon as he reached home he was going to administer thyroid extracts to every one of his small patients who had delayed dentition. He thought the sooner the profession took up the question of the action of ductless glands upon the development of the teeth, the better. The work had to be done by the dentist and not the medical man.

Dr. E. A. Bogue,

said it was well known that hospital dentists, seeking to do the best thing for hospital patients in London, when they found a tooth so badly decayed that the child could not masticate on that side of the mouth, took all the teeth out above and below. He thanked Dr. Davenport for his very kind remarks, and said that he himself could return the compliments by stating how much he was indebted to Dr. Davenport. With regard to Dr. Barrow's remarks, it was true he liked to begin at four years of age, but he did not very often get the chance. With regard to the King of Spain, he did not know whether everything had been done for him that was possible, but he doubted it. Canova, the celebrated sculptor, had left behind a statue of himself which clearly showed that he had adenoids, although such a thing as adenoids was not discovered until fifty or sixty years ago. With regard to big teeth in little children, as mentioned by Dr. Robinson, the teeth seemed to be large, but they were just as large at 5 years as they were at 70. A father once asked him if his girl's teeth were not very big, and he said to him, "Did you ever examine a Newfoundland puppy and see his paws when he was young?" The man laughed and said, "Yes, I remember the dog's feet are very much too big for him, but they are all right when he grows up." The teeth were indices of the size the child was going to attain. On one occasion, he told a parent that his boy was going to be a big man, and the reply was that the boy's father was 6 feet 3 and his grandfather 6 feet 4. With regard to heredity, Dr. Robinson might be perfectly right in speaking of the hereditary influences in the royal family of Spain, but for his part he should be inclined to think the chances were that the entourage of that family had been so nearly the same from birth to adult life for so many generations that the same environment had played upon the children. In Germany the teeth of the higher classes were poorer and much more subject to decay than the teeth of the lower classes.

THE PRESIDENT

did not think that was so, because the upper classes had excellent teeth.

DR. BOGUE

said he was thinking of the upper middle classes.

THE PRESIDENT

said it was true in their case.

DR. BOGUE,

continuing, said a girl 4 years of age was brought to him to see what could be done for bleeding gums and sore teeth. She was treated for pyorrhœa and her teeth regulated, and now he thought a handsomer set of teeth could not be found. Not having begun to exercise her teeth early enough, the enamel of the teeth did not form a perfect cover, but was deflected into cavities. It was the business of the dentist to teach people to begin early enough. With regard to Dr. Robinson's remarks about the irregular type of teeth, he was quite certain it was possible to bring the teeth into correct arches—he did not mean mechanically correct at every point but into a correct arch, and then the teeth must be left to the action of the tongue and the lips and the cusps. They, with the other influences Dr. Robinson spoke of, were what he understood as the hereditary influences that formed the type. On one occasion Baker's father brought one of his sons to him with his mouth protruding, and was in favor of extraction. He begged him to extract nothing, and he agreed to try non-extraction on the ground that if he did not succeed he could still take out the tooth. But he did succeed, and on that occasion he re-invented the inter-maxillary rubber. The case was brought before the district society in New York with the retainer which held the teeth in position, and he told Dr. Baker that the teeth could not be kept there. Models were taken, and today the teeth had gone back to type, and they would go back every time. Dr. Smith was quite right in his opposition to many of the things orthodontists did, and also against eyes and nose specialists. In conclusion, he said if he had succeeded in impressing upon the meeting the idea that it was the dentist's duty to bring before medical men the idea of early attention to those parts which could be so easily and painlessly effectually corrected, he should have done all he hoped to do by reading his paper.

ODONTOLOGICAL SOCIETY OF CHICAGO.

The annual meeting was held November 7, 1911, with the President, Dr. C. N. Johnson, in the chair.

President Johnson delivered an address entitled, "The Necessity for Higher Efficiency in Teaching and Practicing Dentistry."

DISCUSSION.

Dr. George W. Cook:

It is hardly necessary for me to say that I have listened with a good deal of interest to Dr. Johnson's address, bringing to our notice this severe criticism of American dentistry as well as American teaching. I saw this article referred to some time ago. I went to the library, read the article, and the quotations given by Dr. Johnson are correct as I read them in that article. It is always well enough to say "I told you so" after the thing has happened.

A good many years ago many of you will remember I came into the dental profession full of blood and vinegar on the subjects which interest our profession. But the first thing that impressed me when I entered the profession, after I graduated in dentistry, was the lack of the fundamentals and to understand diseases of the mouth that we had to treat. That was solely the reason of my being an exponent of the subject of pathology and bacteriology. When I was a dental student these branches or subjects were merely referred to as a fad. After I became a dentist, they were more or less laughed at and scoffed at, and very few men were thinking systematically along these lines. Of course, the teachings of Miller and Black were ahead of us, but who knew anything about them? Who knows anything about Miller's writings? There are very few teachers who understood what Miller tried to bring forth by his experimental work.

Hunter has happened to come across a lot of dentistry that has been done not by the dental teachers, nor by the better element of the dental profession, but he has come across those cases that we all see almost daily. Only a few days ago a patient presented himself at my offices with a piece of bridge work that was done by one of our leading dentists in this city. He is known in newspaper circles as one of the leading dentists. This man came with a piece of bridge work attached to a couple of loose teeth. The teeth were expected to be lost by the patient when he went to a dentist. But the dentist said, "No. It is easy. We will cure these loose teeth. Rigg's disease is comparatively easy to cure," and he placed a piece of bridge work in that man's mouth with the result they were wobbling around, and if Hunter had seen that one case he would have said just exactly what he has said. He could not help but say it, because Hunter is a surgeon and does not run across the beautiful work we see from the hands of some of the best operators, and which fills us with pride as to what is being done by some men. But he does see just such cases as I have referred to.

About two years ago I went to a certain place for luncheon where a number of dentists had gathered and had their lunch. At the table reference was made to a piece of bridge work that had been placed in the mouth of a patient. It had four attachments, and when I cut one of these attachments three teeth dropped out of the mouth, bridge and all. The woman had worn this bridge and had been in that condition for at least twelve months. The dentist had occasionally seen her. She had lost all the other teeth, except these four from pyorrhea alveolaris. The cuspid tooth was quite firm in the sockets with slipper crown attachment, and when the band was cut up at the gingival border, the other three teeth dropped out with the entire bridge. Such was the condition from which that woman suffered. She was suffering from an anemic, septic condition, produced entirely by the piece of bridge work that was in her mouth. When the bridge was removed and her gums allowed to heal up, she began to gain in flesh, and she is now in good health, something she had not enjoyed for years before.

Now, when you see a case such as that, you know that Dr. Hunter was right in what he said. One should make a prognosis in such a case before he places a piece of bridge work in such a mouth. This piece of bridge work was placed in the mouth by one of our older practitioners in this city. Such are the cases that Dr. Hunter has seen, and that we all see occasionally. We regret very much to see them. Right here in the city of Chicago, and by members of dental societies, the most abominable bridge work and pyorrhea treatments are carried out that any human being ever saw. Dr. Hunter happens to run across more American dentistry of that class than any other type. He has seen them because some of the gentlemen who are constantly traveling to Europe and talking a good deal have doubtless made reference to this class of cases, and he has naturally observed them himself.

I am not inclined to criticise Dr. Hunter because I think some of his remarks are justified with regard to American dentistry. His remarks sting me as much as they do anyone else. But when you go over this country today and visit our dental colleges and find there are very few professors of pathology and bacteriology who have made any particular study of these subjects except medical men, you will not be surprised. There are some men who are studying these subjects just to get a little reputation or a little advertisement out of it. These subjects will never be taught as they should be taught in our dental colleges until the professors are paid sufficiently large salaries to justify men in studying these subjects. You cannot understand pathology by reading a textbook one or two evenings. You cannot study a book which contains what somebody else has written and adapt what you have read to a stereotyped line of work. It is all folly to attempt to do so. It cannot be done either in pathology or in operative dentistry. We have got to get down and study the tissues and the bacteria that produce these pathological conditions, and become thoroughly acquainted with them, and these studies cannot be carried on with any great degree of success without associating with your fellow practitioners. It is the only way to study any professional subject. I tell you, gentlemen, it is a serious proposition that we have before the profession today. We are advocating to the public prophylaxis when we do not know, the fundamental principles of it ourselves. The rank and file of the dental profession do not realize the importance of prophylaxis. A dental student goes to a dental college, and in 99 cases out of a hundred before doing so he has consulted some dentist about his dental education. Perhaps it is a dentist who is practicing in his town. He consults his favorite dentist in the town who tells him a few things and says perhaps, the most important things are operative dentistry and prosthetic dentistry; that there are some schools who have good men as teachers of these subjects. If the members of the dental profession knew it, they would say, here is a fine man, a physiologist, who has devoted his entire life to the study of physiology and its principles; he is teaching in this or that college. And here is another man who has devoted his whole life to the study of pathology; that man can tell you something about oral pathology. Why do not dentists talk to prospective dental students in that way? Too many men engaged in the practice of dentistry forget for a moment that there is just a tooth to be filled. It is all right to fill teeth, but there is something back of the filling of teeth, and that is the cause of disease, and that should be the thing we ought to think about. It is time that the profession of Chicago and the profession of America should wake up to the very important causes of diseases of the mouth instead of paying so much attention to how to fill the cavities in teeth temporarily.

Dr. F. E. Roach:

This paper of Dr. Johnson's is very timely, and one in which we should all be intensely interested from the point of view in which he has treated the subject, and especially with reference to the article of Dr. Hunter. I have thought myself that Dr. Hunter's attitude in regard to American dentistry was possibly very well taken. There is none of us who will deny the fact that there is ground for his criticisms and plenty of it. We all see the class of work he speaks of every day.

Personally, I have been opposed for a great many years to the fixed bridge, and while I have been somewhat biased in my opinion and judgment with reference to bridge work especially and in favor of the more sanitary construction in the form of removable dentures, yet I find it is very difficult for me with my strong prejudice in this respect to avoid many times putting in bridge work and fixed bridge work, that I feel sure in my own mind is not the thing to do. I find it so often the case that my patients will insist, and they will do it in such a persuasive, nice way, that it is almost impossible to resist them and do the thing that in my judgment should be done. I know that we are led very often to make mistakes by submitting to the influences of our patients. They come to us with flattery like this: "Now, doctor, I know you can save these teeth," and they flatter us and pat us on the back and make us believe that we are a little superhuman, if you please, and that we can save the loose teeth, and we take chances and step beyond the bounds of doing the right thing. I have no doubt a good many of these cases have come to the notice of Dr. Hunter, and I think this paper is timely. It will make many of us think of these things more seriously than we have done in the past. I have been prejudiced against a great deal of this fixed bridge work that I have seen, not realizing, however, the injurious results that might come from it, and that have been pointed out by Dr. Hunter.

I like the attitude Dr. Johnson takes with regard to this article; that is, appropriating this criticism of Dr. Hunter to ourselves and making it a benefit to us as a profession and profiting by this criticism and trying to live up to a higher standard of practice and avoid a great many of those flagrant mistakes that we are making continuously in the practice of our profession.

Dr. L. L. Davis:

I have not had the opportunity of reading the article of Dr. Hunter, but I have discussed it with my patients and also with a couple of friends of mine who had seen and read the article. The inference, I might say, from what was told me, was that Dr. Hunter had seen some of the results, some of the poorest results possible, just the same as a surgeon who corrects deformities and such like, will find among the poorest possible element. Hunter has undoubtedly seen cases of the poorest kind, the work having been done in a slipshod manner, and from a man of his standing in the medical profession it was not a just judgment he formed in these cases. I should say, he is very much prejudiced against American dentistry, and simply prejudiced against dentistry because it was American. That is how it looked to me. The argument I put forth when this article was first mentioned to me was this: The chances were that after Dr. Hunter got through with his patients, he did not put them in any better shape or in quite as good shape as the Lord put them at the start; that the average dentist was not expected to be omnipotent, and that all he was expected to do was to repair. The best we do is patch work. What does the surgeon do? He removes a kidney; he does a beautiful operation, but the chances are that the patient dies shortly after the operation. Considering all phases of this subject, I should say that President Johnson has treated it in a very lenient manner, and I think the article of Dr. Hunter is not only ridiculous, but scandalous and libelous. That is the way I look at it. We know that not only in the dental, but also in the medical profession there are just as many poor medical men as there are poor dentists. We cannot help but see poor work in the dental profession, and the chances are that the men who practice medicine or surgery for the best interests of their patients and their profession see lots of mighty poor surgery and horrible examples of the bad practice of medicine. For a man, who happens to have some reputation, to go to work and put himself on record with such a scurrilous article, excerpts of which we have listened to this evening, I think it only shows the prejudice that there must be in his mind.

We cannot help but see things like Dr. Cook has mentioned tonight of bridges that have been attached to loose teeth. But here is the ground I take when I see a case of that kind. The question arises in my mind, How long has it been in the mouth? The patient does not always tell the truth. He may say a year, when it may have been five years. The dentist who put that bridge on may have gotten the roots in perfect condition before it was applied; but the patient has negleceted to do his duty, and in that way all the work that the dentist has done, while it may have been perfect at the time it was put in, yet now it is of no good whatsoever. So I do not criticise the dentist when I see a case of this kind, because I cannot put myself in the position that he was, and the condition the patient was in at that particular time.

Today I happened to have had a patient in my chair, and I did for that patient what I would not do for anybody else, but I simply had to do it in that case. The chances are that if this girl should get married and should move to some other town, I will be the worst maligned man in the dental profession when the next dentist gets hold of her mouth; that is, if she changes her character, because she is the worst patient I have. I cannot do anything with her. I find that I must temporize, I cannot excavate a cavity for her without her acting like a four-year-old kid. She is a grown woman. You must smear them over with cements and paint the softened dentin with nitrate of silver, and then dig out the fillings at the end of six months and do something else. In other words, you have got to do sloppy work with her because you cannot do anything alse. She will stay away for years until her teeth are in a rotten condition. Now, Dr. Hunter may have seen such cases as that. But that is no reflection upon the whole profession, and I think the criticism of Dr. Hunter is totally uncalled for; that he has not only been untruthful, but that he does not do himself justice as a professional man, and the President in his address tonight has handled this matter in a very, very mild way.

Dr. Elliott R. Carpenter:

I have been waiting for this one subject to come up, not that I have much of light or intelligence to offer, but because I have been ashamed. I have been ashamed that any man by the name of Hunter, that has a reputation in England, would dare criticise our profession as he has done. The name of Hunter has always stood for me until now for that which was big and broad and kind and charitable, and such an article as he wrote and published in the *Lancet* and was copied in one of our American magazines is beyond my comprehension.

I had the humiliation of receiving from one of my very best patients, one of my intelligent patients, a copy of this article from the *Lancet* as published in one of our American magazines this summer, *Current Literature*, with a notation at the bottom of the magazine to this effect, "What have you got to say for yourself?"

I thought it over for two or three weeks before I made an answer, and then I made an appointment with the magazine in my hand, went down to his office to talk it over with him, and I pointed out to him as fairly and as broadly as I could how I had always looked up and respected the name of Hunter as one of England's big men, and how I was disappointed.

Why Dr. Hunter wrote the article he did I do not know, but I believe today he is the least broad of the big men of England in his profession, and I believe it is because of the same reason that our own big surgeons are narrow against our own profession. What is it? It is jealousy and nothing more. I do not think it is fair. I do not think it is just for a man to make these sweeping assertions and the sweeping criticisms he has without quoting some other authority than himself. Even though Dr. Hunter did see a lot of bridge work, a lot of crowns, that were as he said they were, I do not think he was justified in making such an attack upon dentistry in general.

It has been commented on this evening by some of the previous speakers that we were not well enough posted on diagnosis because we were not well enough informed on the branches that lead up to it medically. We do not have the knowledge that we should have of bacteriology and the other allied branches. Granted that, we have common sense, and we should have honesty, and if a case comes to you where you are in doubt or uncertain as to the diagnosis, you should be man enough and should be brave enough to flatly state what you think is uncertain. For instance, you believe that you can put a bridge on in the case now in hand, and that it will stand a certain length of time and will do certain duty, but it does not always do it. I have had in the past year the greatest embarrassment in my life in regard to just that one thing, and that is why I appreciate the point that has been brought up here tonight. A patient was recommended to consult me by one of our prominent physicians in town. The lady lived many miles away from here. She came to me for consultation, and after looking the case over thoroughly I said to her, I believe you must lose these two teeth in the upper jaw and wear a plate; but I do believe that we can put in a big bridge below and save you wearing a lower plate for many years. I was perfectly honest in my belief. It meant a large fee. So I talked over the case. Imagine, if you will, my humiliation that, at the end of a year when I said to the patient I believe that will last ten years without any trouble at all, this woman came back to me and I found the whole thing wabbling, with apparently strong abutments all the way around. I made a wrong prognosis in that case, although the conditions were apparently fair and right at the time. Now, I have got to take that whole mass of stuff out and put in a lower plate at the end of a year, when I said it would last ten years, and I thought that was easy.

Lastly, I am very sorry that Dr. Hunter was the one who wrote the article under discussion. I would have been much better pleased were it written by one of us in our own country. I believe that there is something back of the whole thing that spells jealousy.

Dr. P. J. Kester:

I think I could say almost anything here tonight and get support, and yet I believe that the way to consider this article is not to discuss Dr. Hunter particularly in reference to it. I think Dr. Johnson's attitude in regard to this article is a sane one, in that he has simply said in a public way what many of us have said privately. He has made a sweeping statement which has taken us all in; but I am ready to believe with Dr. Johnson, that while this is a rather raw statement coming from Dr. Hunter and it hurts, yet I am inclined to believe that Dr. Hunter is right in some respects in his criticism of American dentistry, the kind he is likely to have seen and the kind he did not see. Those of you who are in active practice, and those of us whose practice is so likely to include those people who went to the shops to have their work done, all know that the criticism made by Dr. Hunter is absolutely true. Teeth are crowned that never ought to have been crowned. The crowns do not fit well. We see ill-fitting and abominable bridge work that never ought to have been put in. It is a constant source of irritation. I believe we deserve this criticism to a certain extent. Commercialism in dentistry is largely accountable for this abominable work, and so I say the criticism is a good thing. It is rough and raw, but I tell you it will do us good. Anything which will stir up the professional pride of the dentist is a good thing. I have stood more for professionalism in dentistry than for any other one thing. I have been laughed at because I have stood by the old type of dentistry as taught in Michigan, where we had two professors, the late Drs. Taft and Watling. These two men taught more professional ethics than the combined teaching staff of the dental colleges of this city. That is saying a good deal, but I believe it. Dentistry is becoming so commercialized that the real and true professional spirit is entirely lost.

While this criticism of Dr. Hunter hurts at this time, I believe it will do us more good than harm; that it will do the dental profession at large more good than anything that has come out for a long time. He has held up the mirror, so that we can see how we look to a man who is on the outside.

DR. A. E. ROYCE:

One of the most noted physicians in England at the time of my short stay over there made the assertion that it was a great injury to the people to have artificial dentures inserted in their mouths because it gave them the power to masticate to some extent, and after they had gotten along in years they ate meat, when they should not. The artificial dentures that were inserted in England at that time were put in over roots cut off even with the gums and the canals left open. I think Dr. Hunter's criticism of American dentistry, as seen by him, is probably absolutely correct. But the title of his paper should have been "Dentistry that is Called American Dentistry by the Shops in London." The Americans who are practicing in Europe are not doing that kind of work as a rule, although the tendency in Europe today is to deteriorate in their work because of the competition, the commercialism, and their patients will accept dental work that would not be accepted in this country. The shops all over Europe have signs out to this effect "American Dentistry," even though the proprietors may not be able to speak much English, and have never heard an American, lecture on the subject of dentistry; but they have engaged young graduates from here to go over there and put in fillings with machines in the shop way; and our dental parlors do not begin to know how they grind out work. The worst specimens of dental work you see here are not as bad as you find in that country. I fail to see myself where English dentistry is ahead of American dentistry, except perhaps they are more skillful in extracting teeth. They do not save as many teeth as we do. It is a common saying over there that a tooth that has lost its pulp should be extracted. They know little about the saving of teeth, even at the present time. I have in my own mouth, teeth, the pulps of which were lost, and the canals filled thirty-five years ago. These teeth are doing good service. I do not feel that I am very anemic on account of that, and I am able to masticate better than I could with a plate. I do not see any reason why these teeth should be taken out.

I have no quarrel about the teaching of dentistry at the present time; but I think if Dr. Hunter had only headed his article as it should have been headed, and had written upon the subject on which he was to write, he would have been absolutely correct, namely, "Bridge Work and Crown Work as Practiced in the London Shops." That is absolutely what it is, because he is judging by what he has seen in a London hospital to a great extent, and the hospital people do not patronize dentists who charge them a guinea for getting into the chair and another guinea for getting out, as the American dentists do in London.

Dr. J. E. Hinkins:

My attention was first called to this article of Dr. Hunter's by a gentleman who came into my office. I read it carefully and

I said to myself: "That hits me a little, I guess." I thought a few minutes and I said: "I have had great admiration for the Hunter race, but I think this man needs a good dose of calomel and a good dose of tartar emetic in the morning, so that it will work on him both ways and clean him out." (Laughter.) He has been in bad company. While the Hunters have been a credit to science, this man has something wrong with him. I saw a little of the class of work on which Hunter doubtless based his observations when I was in London, and it in no way compares with the class of work that is done in the United States. Hunter sees the class of work to which Dr. Royce has referred—the shop work of London. He has not seen nor does not see the up-to-date work that is done by the dentists of the United States. We must admit that none of us are perfect. All of us make mistakes. I know I have made mistakes. I am not an enthusiast on bridge work and never have been, but I have put in bridges, and I have had the same results that Dr. Carpenter has had. Whether it was a lack of education on my part or a lack of knowledge of physiology and pathology, diagnosis or prognosis, I do not know. But we have got to realize that when we work with a living cell, it is entirely different from a pathological cell. A living cell and a dead cell are distinctly different. We see bridges put on over teeth, with great spaces there for the foodstuff to accumulate, to decompose and to redecompose, and when you see such cases you do not wonder at the criticism that Dr. Hunter has made. I think Dr. Mitchell was with me at the time; we went into one of the hospitals. There were two patients who had on bridges, and under every bridge there was a root. Every one of the roots was abscessed. You could take cotton and a pair of pliers and press up on the gum and wipe away the pus from it. After I read the article, this class of work came to my mind, and I said to myself, "Dr. Hunter has made his observation on that class of cases and on that class of work." It is similar to the class of work Dr. Carpenter has referred to. If the patient had gone along for a few years and then to the hospital, the work would have been as bad as Dr. Hunter has described. This article will do the profession generally good, not that I advocate the manner in which he has written it. We can see ourselves in the looking glass. While it hurts, I believe it will do the dental profession good. I believe the article is timely. The author, however, used very poor judgment in the manner in which he wrote it and in the title of it. I have read the article a second time. It so happens that one of my acquaintances in the dental profession is working in one of the dental shops here in Chicago. I showed him this article in the *Lancet*. He said: "I have not time to read that. I have got so many teeth to make an hour if I keep my place in this shop. I have so many dollars to make every hour. If I fall back one hour I must make it up, otherwise I cannot get my fee." As to sanitary bridge work he said we have got to do the work fast to get the dollars and the cents, and it does not make much difference how it is done. So you see, dentistry is a commercial proposition with him. So in most of our dental parlors it has come to that. It is equally bad or worse in England with those men who have had no particular training in dentistry. I said to my friend, "have you any cases coming in of bridges you have put on that come back for treatment?" and he said "yes." I told him I would like to call in some time to see this work and how it averages up. I have seen some of the bridges they have put on there and from a sanitary standpoint they will compare with the best work, while others will compare with the worst that are put on.

I saw a case week before last where they had five teeth, and they put a full denture on these five teeth, and I did not see how they could hold them up when they were on. They received three hundred dollars for that bridge from a woman. Pus was escaping from around the necks of the teeth. I said to him, " how does your conscience feel after having done such work?" and he replied that he had no conscience.

Dr. J. H. Woolley:

I have enjoyed the paper very much for its thoughtfulness and kindly spirit. I think in some respects Dr. Hunter is right, but I think his criticism is directed more at bridge work than any other phase of dentistry, although he had not the data, and he has lost his authority upon the question of American dentistry.

Dr. J. G. Reid:

I think the subject has been covered very largely by the other speakers and there is not much left to say. I have not read this article in full, but some extracts of it. I fully agree with the majority of the speakers around this table that the article is a good thing, but it seems to me that the criticism to be offered against the article lies wholly in the direction that it was poorly put. It could have been done in a much better way, and the impression made would have been more favorable and it would have looked better to us.

I do not believe that Dr. Hunter is criticising the American dentists so much here as what he has seen in his own country. While we have got to bear a certain portion of that blame—or the sting, if you please—like the proverbial water on the duck's back, I let it roll off. It does not bother me very much. I have gotten past the period of feeling all these slurs and stings that are put at a fellow once in a while. I put on a lot of salt and let her go. That article does not annoy me very much. I do not take it so deeply to heart as a great many would, but I believe it was a good thing—all things considered. You cannot get away from the fact that we are progressing. Commercialism in dentistry is being practiced almost every day, and the commercial side of American dentistry is doing an injustice and an injury to dentistry, and yet how are we going to avoid it? We cannot stop it. We cannot arrest it by anything we may say or do. We may talk until we are as old as Methuselah and we will not stop this commercial business one iota. It will go on ten per cent worse every day. Dr. Hunter probably wrote that article when he was bilious, and perhaps were he in a more sober condition he would not have done so. I think that is true.

Dr. Johnson's view of the matter is very beautiful and fair and just. Nevertheless, we may preach until we are grayheaded and we will not change this condition of things. You can talk about it; you may do some good, but you cannot do good all the time.

Dr. Johnson (closing):

I ought to say that it was an unusual subject to take for a President's address. I wrote this address while I was on my vacation. The reason I came to write it was that I received quite a number of letters from different parts of the country asking me to reply to that article in *Current Literature*. I wrote a short editorial and sat down and wrote this address.

The statement has been made here tonight that much good will come of this article of Dr. Hunter. I want to refer to two or three features of the whole situation as they have impressed themselves upon me very keenly and give the reason why I wrote this paper I have read tonight. One is my regret that the term "American dentistry" should ever be used. I have recently written an editorial deploring the fact that the term "American dentistry" was ever used. We should not say "American dentistry," "English dentistry," or any other kind of dentistry—it is dentistry.

Another thing that was very unfortunate is that Dr. Hunter did not display good taste in writing this article. While it has been said here that his strictures were probably true from the point of view of the dental work he has seen done over there, yet I tell you, gentlemen, his language was not judiciously selected. It was too intemperate. I am as willing to accept criticism which is intended for my good or for the good of the public as any man on earth. But the most deplorable feature of the whole thing is that this article will do more harm than good. It does more harm than you can ever counteract in a day. It will mislead the public. Any single statement that is made that develops a distrust on the part of the people, a distrust of the honesty or efficiency of dentistry is doing harm, and the most abominable thing connected with the whole article was that one of our prominent magazines should stoop to be a muck raker and discredit American dentistry in the eyes of the public of this country. It will take a great many years for us to live down the impression that has been left upon the minds of the people, because there has been developed a distrust of dentistry by virtue of the publication of that article. I do not blame Hunter as much as I do *Current Literature*. *Current Literature* was apparently seeking notoriety and stooping to the methods of yellow journalism when it did such a thing as that.

If we follow to the ultimate conclusion what dentistry can do, and is doing, we will find that it is getting right at the heart of the health of the people and is doing more to bring about longevity to the race than any other profession, and in saying this I respect the surgeon and the medical man. To let them do as Dr. Royce has pointed out—extract teeth by the wholesale and depend upon artificial teeth—is absolutely wrong and contrary to the modern practice of dentistry. I think the English surgeon is also wrong when he said that artificial dentures should not be used because they enabled aged people to eat meat when they ought not to. A statement similar to that was published in this country by an American, who said that artificial teeth were doing an incalculable amount of harm. It does not do harm to put a good masticating apparatus in the human mouth. The harm comes from not having a masticating apparatus. While artificial teeth are never as good as the natural teeth, and we should save the natural teeth as long as we can, we do these patients a benefit after they have lost their natural teeth to put in artificial teeth, because then, in a measure, they can prepare their food for the stomach. Many individuals have gone to their graves before their time simply from not having a good masticating apparatus, and the physicians have not known what was the matter with them. When I think of what dentistry can do for the people, and then read an article reflecting on our profession in one of the leading American magazines, I tell you I am going to defend my profession against such an attack.

I do not apologize for the bad work that has been done and is being done in the profession. We are handicapped, no matter how carefully we do perform our work. We are handicapped by vital forces back of which we cannot go. While Dr. Carpenter was disappointed in the failure of that bridge after one year, the value of that bridge in assisting the individual to masticate for one year was worth more than the money paid for it. We are accustomed to estimating these things in too small a way. If some dentist should place a bridge in my own mouth which enabled me to masticate for six months or a year, one or two hundred dollars would be a small item compared with the comfort and usefulness of that bridge during that length of time, and if at the end of that time this bridge must come out and a plate used, then that dentist is doing the best he can for me. If we go ahead and do our work as honestly as we can, even if we sometimes fail in judgment, we should at least receive as much charity as does the surgeon who loses a patient by a mistake.

As I said in my paper, the lesson we must learn is to apply ourselves more closely and develop charity for each other.

I do not believe in criminal dentistry any more than I do in criminal surgery. When a man has to do with the human being it is different from selling goods. It is a sacred duty for the professional man to have in his heart the conviction that he is dealing with humanity, and he ought to have his conscience developed up to the highest pitch.

As to commercialism in the dental profession, we do not know very much about it as compared with what it was fifty years ago. It was nothing but commercialism then, when they packed their grips and peddled dentistry all over the country. It is true that dentistry has taken on commercial aspects, still I think our profession is growing. We are doing better work for the people, and the lesson for us to learn is to try to serve them a little better in the future than we have in the past.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,
PUBLISHED MONTHLY.
EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

THE PUBLIC PRESS AND THE PUBLIC HEALTH.

It is a most encouraging sign of the times when the public press begin to take an interest in the health of the people and devote a reasonable part of their space to topics calculated to show the public how to live. It is only just beginning to be recognized that human health is the greatest community asset, and that the most expensive thing in the world is disease. It pays to keep people well, not only for sentimental reasons, but in actual dollars and cents, and when the editors of our daily papers publish articles showing the public how to avoid disease they are contributing to a community economy and promulgating happiness among the people.

A most noteworthy example of this is the *Chicago Tribune* which has a department entitled, "How to Keep Well," under the able direction of Dr. W. A. Evans, late Health Commissioner of the city of Chicago. This department is given space on the editorial page and it is attracting more than ordinary attention, not only because of its prominent position in the make-up of the paper, but because of the timeliness and importance of the subject and because it is conducted by one of the ablest men who could have been selected for such a work. Dr. Evans publishes from day to day a series of articles on health topics which are of more practical value than any similar series we have ever read, and they are clothed in language which the average newspaper reader can understand and apply. The whole tone and tenor of the articles is to show the people how to avoid disease by proper methods of living. There is nothing technical or stilted in them, and they are in every sense essentially practical. The *Tribune* is to be congratulated on its good judgment in starting such a department, and also in its discrimination in securing a man so eminently fitted to conduct it. We predict great good to the community from this movement.

The same may be said of other papers throughout the country which are printing the series of articles on the care of the teeth and mouth, as inaugurated by the Illinois State Dental Society. These articles are calculated to do great good to the public, and no harm to any one. It is a case of building up without any tearing down, a work of construction without destruction. The articles are sent out in a purely humanitarian spirit, and the papers which are using them are contributing to a humanitarian cause. It will soon be recognized by the reading public that papers which contain matter calculated to better humanity are more worthy of support and more profitable to the community than those which play to the baser instincts of the people by filling their pages with sensational news items and the reports of questionable happenings.

The public press can be a potent factor in forwarding the movement for better health, and those papers which are now devoting their space to this end should receive the commendation of all thinking people.

THE EDITOR'S DESK.

TAKING ADVANTAGE OF A FRIEND.

When my good friend, Mr. C. L. Bingham—late manager of the S. S. White Dental Manufacturing Co., in Chicago—recently started for a trip around the world, I inveigled him into a promise to drop me a line occasionally and tell me how he was getting along. Since then cards have came from time to time from different points, and all have been cherished, not only for their intrinsic interest, but because of the fact that Mr. Bingham was thus remembering me. About the New Year I received a letter from him, and it is in this particular that I am going to take advantage of a very dear friend. Mr. Bingham of course had no idea that this letter was to be published, but when I read it I could not escape the conviction that it would be a shame to keep it from my readers. It is so full of interest and so entertainingly written that I feel sure it will be highly appreciated by every one—particularly by Mr. Bingham's hosts of friends. So I am going to run the gauntlet of Mr. Bingham's possible disapproval and print it. Anyhow, I am safe for the present, because Mr. Bingham is now on the other side of the world and I am snug in my "den" beside the editor's desk. The letter is as follows:

S. S. "Cleveland," Dec. 1st, 1911.
En route Colombo to Calcutta.

Friend Johnson:

With abundant reason we celebrated "Thanksgiving" in Yankee fashion yesterday, and now December we are urged to believe has arrived despite exhibit of 81° in the shade by the thermometer and summer-wear on deck.

Our cruise to date has been thoroughly delightful without an unpleasant day or plan disturbed, and time flies only too quickly. Interesting renewals of former pleasures in Madeira, Gibraltar, Nice, Monte Carlo, Cairo, and the Nile, with our stay in Egypt more fascinating than last time because of a full moon. We fortunately escaped the usual "hot time" in the Red sea, and beyond Bombay had comfortable days and cool nights across India north. Perhaps you have read Price Collier's recent book, "The West in the East."

It concisely describes our vision of India, but no historian can adequately describe, nor photograph illustrate the people. Amazing contrasts everywhere. Admiration for what Great Britain has done and is doing grows with each mile covered, and a splendid lesson of loyalty is taught by the attitude of the Englishman, young and old, far from home obeying orders and assuring, largely through railroad extension, future control of a wonderfully productive land.

We have seen a goodly fraction of the 300 million souls, and it will take time to soften some of the pitiful sights unavoidable all along. It is a very fortunate time to visit India, as the Durbar festivities and great preparation for entertainment of the King-Emperor make spectacular additions to the picture. The general impression seems to be that the king is taking grave chances in attempting this tour, and he is being urged to omit Calcutta, etc.

One gets a vastly different point of view when leaving 12,000 miles behind the school books and maps, and standing on the spot studied about.

Watching the hungry vultures at the Parsee "Towers of Silence" and then listening to the reason why from tongue of attendant in the beautiful cemetery on Malabar Hill lessens our first horror while he is shuddering at our burying bodies for worms to eat.

So with the frightful burning gnats and nasty sacred animal worship, vile temples and viler bathing and drinking of polluted water—all sincere and devotional.

Poverty is appalling, hunger common, yet the almost starving member of some one *caste* shuns horror stricken any help from another, and will not accept direct help from a white hand, fearing pollution.

The ruler of a petty province with retinue of servants, looks down from back of his elephant while women and little children with naked hands gather filth from the road and plaster it on wall or hut to dry in the sun for fuel. The men seem incessantly at work slowly moving and in our thinnest clothing and heaviest pith or cork helmets we can almost envy their lack of costume below the pile on their heads looking like last week's wash.

With it all they look contented and whether stoics or nursing quietly grievances to be avenged later can only be guessed.

Refusing human assistance so generally I believe firmly that they will be given chance for salvation through One who said, "And if I be lifted up, will draw all men unto me."

We were glad one morning after thirty-six hours' continuous express train ride to reach the most interesting town in India—Agra—and the poets, the painters and book writers have failed and will fail indefinitely to give more than a suggestion of the beauties in mosque and palace and fort and tomb.

It is well worth a trip around the world to stand at sunset in front of the matchless Taj Mahal which is the one building man has erected to be pronounced "simply perfect."

Flippantly enough the guides and books tell us that 20,000 men labored twenty-two years to finish the Taj and the original cost was $35,000,000, exclusive of decorations added.

The reality before our fortunate eyes is so surpassingly beautiful as to seem unreal and likely to vanish any moment.

After long inspection of the marvelous mosaics in semi-precious stones, the lattice work screens in marble and alabaster, but looking ten feet away like filmy lace, the tombs of Jehan and wife and the carving of flowers in pure white marble, panels of flowers done in exquisite colored mosaic (thirty pieces in a single blossom), the entire Koran done in black marble inlaid on white and the extraordinary filtered light tenderly touching the inner court—we listened to echoes of the chanting by loving attendants under the pure white dome and went out satisfied and happy.

I climbed one of the graceful minarets (137 feet) for superb view of Agra, the Jumna river, distant deserted Fatehpur Sicri, near by tomb of Akbar and a mile away the great Agra fort and priceless Pearl Mosque.

Later we three sat in the famous fountain garden and watched the shadows change the color of the Taj and reflect its beautiful bulbs and dome in the water until after the sun had dropped behind the palms and left us thankful that blessed memory will keep the vision "a thing of beauty and a joy forever."

From boyhood I have longed to visit Ceylon and to do so this trip have gone around over 3,000 miles, land and sea, and been well repaid for here again no disappointments came and the "spicy breezes"—"earth's paradise"—the land "where every prospect pleases and only man (beggar in the Temple) is vile"—exceeded fondest expectations.

The ride from Colombo up into the mountains as far as Kandy is one wonderful moving picture fascinating and bewitching with extraordinary variety.

I cannot dispute claim that for its length (fifty miles) the variety of scenery is unequalled elsewhere.

Paddy fields and rice culture at its best, tea, coffee, rubber and bread fruit, sugar cane and miles of food palms wonderful to watch.

The best change from Indian peninsula was the remarkable one in natives who are bright, keen, and happy. Little children all along waving at us and smiling a welcome. At villages we bought fresh bananas and cocoanuts to eat and drink as we rode along.

In rickshaws at Kandy we speeded over the fine roads lined with natives in their picuresque costumes, while the lake and mountain views were entrancing.

A four-mile drive from Kandy and we had one more sensation in the most beautiful botanical garden in the world passing the trees whose thousands of "flying foxes" (enormous bats) hang heads down or circle blindly in the air.

Imagine in one afternoon seeing practically every tropical tree and most plants.

Talipot palms, cocoa, cinnamon, nutmeg, mango, ebony, bamboo, clove, sago, tapioca, banyan, almond, betal nut, camphor, orchids and ferns and others beyond numbering.

I must quit tiring you, but a plain ordinary business man gets enthusiastic on his first long respite from hard work, and I have several times lately put my O. K. on Robert Louis Stevenson's contention that "Perpetual devotion to what a man calls his business is only to be sustained by perpetual neglect of many other things. And it is not by any means certain that a man's business is the most important thing he has to do."

We are perfectly well and due in Calcutta tomorrow, where this will be mailed to carry best wishes to you and yours, and remembrances always to possible inquirers among mutual friends.

We are going to Darjeeling for a look at the top of the world, and en route at the jungles, a couple of rides on the sacred Ganges and more of interior India, then to Rangoon "on the road to Mandalay," thence Singapore, Java and Manila—ready to start for China and Japan.

Happy New Year to all.

Sincerely,

C. L. Bingham.

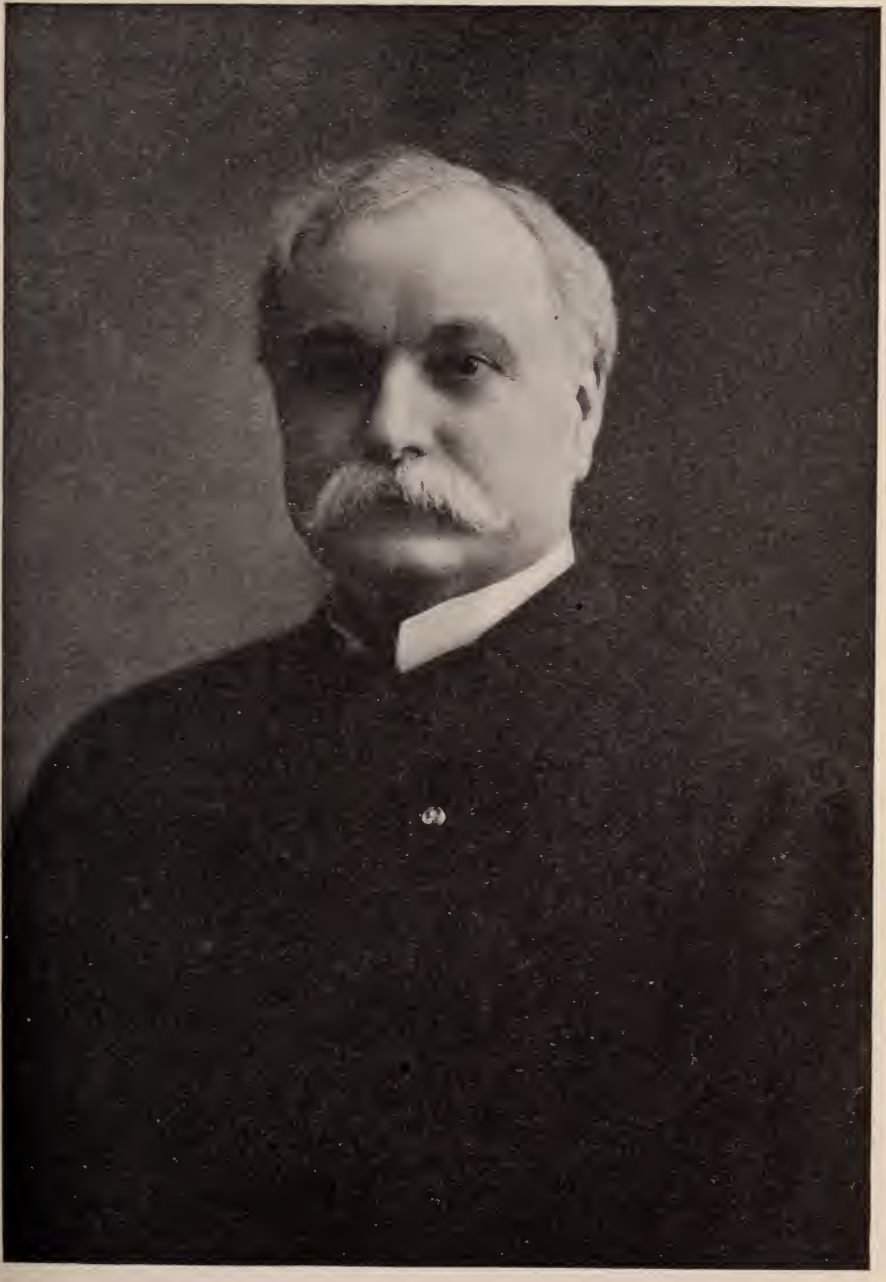
Dr. C. N. Johnson, Chicago.

OBITUARY.

DR. SAFFORD G. PERRY.

Died: In New York, of uremic poisoning, December 22, 1911, Dr. Safford G. Perry.

Dr. Perry was born in Wilton, N. Y. in 1844. He obtained his early education in the public schools, and became a student of dentistry with his cousin Dr. George Perry at Yonkers, N. Y. In 1863 he entered the Pennsylvania College of Dental Surgery, from which



Dr. Safford G. Perry.

he was graduated in March, 1865. At the same college and in the same class was graduated his lifelong friend Dr. E. T. Darby of Philadelphia, and it is from Dr. Darby that we obtain particulars regarding his early life. Immediately after graduation he began practice with his cousin in Yonkers, but moved to New York City in two or three years, and was in continuous practice there till his recent illness—a period of at least forty-five years.

He was a member of the National Dental Association, (having contributed an able paper to the last meeting at Cleveland,) The Dental Society of the State of New York, The Odontological Society, The First District Dental Society, and the Central Dental Association of New Jersey.

His clubs were The Lotus Club, The Athletic, The New York Art Club, and the Knights of the Round Table. He was a prolific contributor to dental literature, and a poet of no mean order.

He was twice married. His first wife was Miss Helen Doty of Yonkers. His second wife was Miss Francis Shedd Thomas. He had two daughters, Mrs. Alfred Bell, and Miss Marjorie Perry, who survive him.

Thus is stated in brief and conventional form the facts concerning the life and death of Dr. Safford G. Perry, but no such statement can suffice as a tribute to our late lamented friend, and if in the following lines the personal note of the editor of the Dental Review be made the dominant chord it must be pardoned on the ground that Dr. Perry was his very dear friend, and that his death comes to him as something more than an ordinary affliction.

In all the names that have graced the pages of dental literature no name has carried with it more of grace, of ability, of culture, and, most of all, of loving kindness than that of Dr. Perry. Wherever Dr. Perry stood, there was typified the essence of a true and courtly gentleman. Not content with doing good, he was ever being kind. On his brow there shone the breadth of intellect, in his heart welled up the perpetual fount of pure esteem. Not in all the world was there a man more forgiving of the faults of others, more charitable of the mistakes of his fellowman. He who could not do a base or unkind thing could find it in his heart to overlook baseness or unkindness in others. He knew that all men are not perfect and he was willing to condone their imperfections. He was big enough to look beyond the ego, and to take into his great and loving heart the cause of all humanity.

Perry was at the same time sturdy oak and clinging vine, while the perfume of perennial flowers filled his soul. Where there is the fragrance of the rose, the whiteness of the lily, the soughing music of the needles of the pines, or the gentle lap of wavelets on the beach, there are the memories of our beloved friend.

Often in the stillness of the night, I have sat and thought of my many friends—my friends in the flesh and my friends in the faith. And Perry was always there—Perry and one other;—he whose name has already been written in this meagre tribute; he who was Perry's best beloved friend. And when I have thought of these men I have been made better by it, and now I lay upon the breast of the one my modest wreath of immortelles, and into the heart of the other my loving sympathy.

Words are weak and deeds are bare,
When the spirit cleaves the air;
When the form of friend is gone,
Leaving memory alone.

BOOK REVIEWS.

NOTES ON DENTAL ANATOMY. By T. W. Widdowson, Licentiate in Dental Surgery of the Royal College of Surgeons of England. Late House Surgeon to the Liverpool Dental Hospital. Author of "The Care and Regulation of Children's Teeth." Pages, 130. Published by John Bale Sons & Danielsson, Ltd., London, England, 1911.

The author of this book denominates it "A Pocket Tomes," and acknowledges his deep indebtedness to Tomes in the preparation of the book. In fact, he has consulted several works and has condensed the knowledge thus gained into the closest limit. The work is written in a clear and concise manner without waste of words and contains much useful information for the student. Besides this it is freely interleaved with blank pages for the student's own notes and drawings. In this connection it would have seemed desirable for the author to have illustrated his work more fully. Comparative Dental Anatomy is considered quite extensively, 75 of the 130 pages being devoted to it.

This is the second edition of the work and we have a kindly suggestion to make to the author for future editions, which we hope may be issued from time to time. His nomenclature is not in accordance with the most recent advances in the subject. In speaking of human teeth he uses the terms "Canine" teeth for the cuspids, "milk" teeth for the deciduous teeth, etc. These terms should not be used in a book which is intended for students. More and more is the necessity apparent for an international commission on nomenclature to the end that greater harmony of terms may prevail among our authors. The writers of books are doing a wonderful work in advancing the status of dentistry, and these books to do the greatest good must be made more uniform in their nomenclature.

PRACTICAL HINTS.

Edited by J. E. Schaeffer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, The Dental Review, 55 State Street, Chicago, Ill.)

Burnishing Matrices:—In constructing porcelain Inlays, to secure an exact adaptation to the walls of your cavity, it is often necessary to burnish as many as three consecutive matrices, before a satisfactory fit may be obtained.—*A. E. De Riemer.*

Cotton:—When loading your cotton holder, cut the end of the cotton as it comes from the roll crosswise into strips ½ to ¾ inches wide. Pack these into the holder and when using small bits of cotton, you will be pleased to see how nicely you can get just what you want, no more.—*C. E. Allen, D. D. S., Chicago, Ill.*

To Remove Teeth from Vulcanite:—Use a small jar which has a tight fitting cap (screw cap preferable), place the piece in the jar and submerge with bisulphate of carbon; replace the cap and allow to remain an hour or so when the teeth can be easily removed from the rubber.—*V. B. Newell, Stafford, Kan.*

To Clean the Palatal Surface of Vulcanite Dentures:—After taking the denture out of the flask and removing the plaster from it, with a piece of cotton dipped in strong nitric acid wipe over the surface quickly, and immediately immerse in some alkaline solution such as a saturated solution of bicarbonate of soda.—*A. Dangar Burne, Sidney, Australia.*

To Remove Cement:—When it is desired to remove the pin from a broken off detached post crown, or clean off old hard cement from anything, don't drill, and scrape, and swear; just drop the piece that you wish to clean into a glass stoppered vial of strong ammonia and leave it over night. The cement will all have vanished by morning.—*Arthur G. Smith, D. M. D., Peoria, Ill.*

Gold for Casting:—The idea of casting clasp metal with uniformity is found impractical because it partly loses its springy quality and so frequently assumes a crystallized condition that results are uncertain. When this crystallized condition occurs the addition of a small amount of pure gold may give a free casting rigid alloy again, but it is always uncertain and a fixed alloy of known karat is recommended. So far as I now know 22 karat gold alloys with platinum and iridium in the same proportions as pure gold and platinum for fillings proves best for partials, at any rate it casts clean and clear and seems to be about equal to clasp metal in stiffness, a little more iridium might be an advantage. Casting lower partial dentures using number 10 iridio platinum wire to connect from space to space and using loose-pin crowns for the teeth seems an ideal restoration. Cast the spaces separately and solder the connecting truss. Full dentures in cast gold would require a larger machine than we now have, but even then their practicability would be doubtful on account of waste; besides full dentures entirely of porcelain are coming.—*C. N. Thompson, D. D. S., Chicago, Ill.*

Hyperemia of the Pulp:—Hyperemia of the pulp is a disturbance which is most frequently met with in the routine practice of dentistry. As we have stated above, not every form of increased reaction to temperature changes should at once be classed as a pathological disturbance, it may occur as a sequence of lowered resistance in general or the specific tooth may be the point of minor resistance on account of a previous insult or other possibilities. If, however, the subjective pain in the tooth under observation as induced by heat or cold is of a sharp, lancinating character, lasting for some minutes and leaving the tooth with an uneasy, dull feeling for some little time thereafter, we are reasonably sure that an acute hyperemia of the pulp is present. If the tooth should have a cavity, the condition of the layer of dentin intervening between it and the pulp is of prime significance. Should this layer be of a sound, normal structure, one may be reasonably sure that no microbal infection has as yet penetrated through it, while if the structure is decalcified, one may expect that the existing hyperemia is merely the initial stage of a forthcoming inflammation. If, on filling the cavity temporarily with a gutta percha preparation, the tooth shows no further reaction to ordinary temperature changes, acute hyperemia may safely be diagnosed.—*Herman Prinz, M. D., D. D. S., St. Louis, Mo.*

Occlusion Plus Articulation No. 8:—After having arranged the entire upper set of teeth in accordance with the curved surfaces of the lower base plate, we place the lower teeth in the following manner: The lower second bicuspids are placed in the interspaces between the upper bicuspids. The lower second bicuspids are then followed by the lower first molars and these are followed by the lower second molars.

During the placement of the posterior teeth the lower model is moved from side to side to observe whether proper articulation is being obtained. We will find that if we have used an anatomical mould of tooth and have prepared our wax base plates in the manner described little trouble will be had in obtaining proper articulation. The placing of the lower anterior teeth becomes a simple matter of filling in the space left between the lower second bicuspids. Trouble is sometimes experienced, however, with cuspid interference. This can be overcome by shortening the distance between the mesio labial angle and the summit of the lower cuspids and lengthening the distance from the mesio labial angle to the summit of the upper cuspids. This simple preparation of the incisal edges permits the upper cusps to pass between the interspace of the lower cuspid and first bicuspid. In placing the lower incisors it may be necessary to narrow them slightly.—*J. E. S.*

Suggestions on Nitrous Oxide Anesthesia:—Snoring after the administration of nitrous oxid for a short period of time and laryngeal stertor must be carefully discriminated. Patients with thick pendulous uvulae begin to snore a few seconds after inhalation has commenced. This is also true of patients having post-nasal adenoids and enlarged tonsils; also those having loose, baggy cheeks. To presume such snoring a sign of anesthesia and to operate with no further testimony to the fact that anesthesia has ensued would be committing an egregious blunder. Snoring *per se* is not stertor. True stertor is caused by the vibration of the aryteno-epiglottidean folds, and is more musical. A group of symptoms that anesthesia has ensued would, to my mind, be a far safer guide to the anesthetist, and would be more scientific. Patients will snore and not be anesthetized. I usually watch breathing very carefully, but if the kind of breathing would indicate anesthesia while the conjunctival reflex persists, the return to consciousness will be very rapid. Note the following changes: Duskiness of skin; ears and finger-tips darker; pupils dilate; eyes dull and expressionless; squinting, and if pure nitrous oxid be administered to children, minus oxygen, an early jactitation occurs, which will often preclude the possibility of an operation. Quivering of the orbicularis palpebrarum warns us that jactitation is about to commence. Oxygen administered with nitrous oxid at this time is advantageous, because the anesthetic qualities of the nitrous oxid progress and the asphyxial symptoms are abolished.—*C. F. B. Stowell, D. D. S., Chicago, Ill.*

A Valuable Root Filling:—A preparation of gutta-percha that was suggested by Dr. R. C. Cochran, some years ago, led me to some of the many experiments I made along this line. It opened up the possibilities of a new root canal filling that seemed to suggest to me many important features. Undoubtedly, you are all familiar with the preparation of this agent, but I want to suggest it again for a little further consideration. Dr. Cochran's method is simply as follows: Dissolve gutta-percha in chloroform and when the excess of chloroform has evaporated add eucalyptol, and as much thymol is added to this as the oil will take up. Then grind this compound up to a consistency that can easily be handled, leaving it in this state until it is to be used. But in these experiments I used the eucalyptol without the thymol. If the canal has been sterilized the thymol is too irritating and is unnecessary. Now what really happens in this preparation is simply this: A certain portion of the chlorin remains in the gutta-percha and the essential oil helps to retain that substance in a combination with the gutta-percha and renders it into a workable state. The chlorin that remains in the gutta-percha and the terpine that is in the essential oil combine and form a dihydrobenzol, which has very efficient antiseptic properties. Dihydrobenzol also has some irritating properties due to an oxidizing process that goes on for some little time, especially if there is much organic moisture in the root canal. I don't wish to be understood that this substance has a complete destructive power on bacteria, and especially on the spores of bacteria, but that it has a strong inhibitory action, and with some bacteria a germicidal power. The staphylococcus and the typhoid bacillus were destroyed in root canals by this agent, but the anthrax bacillus would after ten or twelve days develop in the culture media.—*Geo. B. Cook, Chicago, Ill.*

MEMORANDA.

ILLINOIS STATE DENTAL SOCIETY.

The Forty-Eighth Annual Meeting of the Illinois State Dental Society will be held at Springfield, May 14, 15, 16, 17, 1912. A. E. Converse, Chairman Local Arrangements Committee. J. F. F. Waltz, Secretary, Decatur.

AMERICAN DENTAL SOCIETY OF EUROPE.

The Thirty-Ninth Annual Meeting of the American Dental Society of Europe, will be held at the Palace Hotel in Brussels, April 5, 6, and 8. An interesting programme will be furnished, and a cordial invitation is extended to members of the profession to be present. Geo. H. Watson, Hon. Secretary, Pariser Platz 7, Berlin, Germany.

NORTHEASTERN DENTAL ASSOCIATION.

Resolution passed by the Northeastern Dental Association at Portland, Me., October 27, 1911:

Resolved, That the Northeastern Dental Association heartily endorses the intention of the National Dental Association to re-organize along the lines of the American Medical Association; and

Resolved, That, if it meets with the approval of the National Dental Association and the State Societies of New England, the Northeastern Dental Association will be glad to come into the National Dental Association as the Northeastern Branch of the National Dental Association.

Resolution unanimously adopted.

OHIO STATE DENTAL SOCIETY.

The following resolution was unanimously adopted by the Ohio State Dental Society, December 6, 1911:

Whereas, The National Dental Association has tentatively adopted a Constitution, following the plan of the American Medical Association, providing for state and territorial dental societies becoming constituent members thereof and entitled to a proportionate representation in the House of Delegates, when two thirds of the membership of any state or territorial society is officially reported to the National as members; therefore, be it

Resolved, That the Ohio State Dental Society recognizes the need of a larger and more effective National organization and endorses the proposed plan as one which should have the support of all state and territorial societies; therefore, be it further

Resolved, That the Ohio State Dental Society in annual session December 5, 6, 7, 1911, officially expresses a desire to become affiliated with the National Dental Association and pledges at least two thirds of its membership for a period of two years, beginning in 1913, in accordance with the aforesaid Constitution.

GOLDEN ANNIVERSARY OF THE IOWA STATE DENTAL SOCIETY.

The Fiftieth Annual Meeting of the Iowa State Dental Society will convene at Des Moines, Iowa, May 7, 8, 9 and 10, 1912, beginning Tuesday, May 7, at 9 a. m.

The Coliseum with its large floor space has been secured for clinics, exhibits and lectures.

One day will be given over to the older practitioners and ex-Iowa practitioners as a home-coming event, to exhibit, lecture, clinic and banquet, to which all are urged to attend. This we expect to be one of our most interesting days.

The exhibits will be the largest ever given by any state society. Complete and extensive modern dental equipments, appliances and instruments will be shown and demonstrated. And in contrast a large exhibit will be made of equipment, appliances, instruments, etc. of fifty years ago, that will be highly interesting and educational and will be in charge of Dr. A. D. Clark, of Charles City, Iowa, who would be pleased to correspond with anyone who might add to this exhibit. The modern exhibits will be in charge of Dr. H. A. Elmquist, Master of Exhibits, Des Moines, Iowa, to whom application for space should be made at an early date.

Further information will be furnished upon request from ethical practitioners of other states contemplating a visit to the meeting and to whom we extend a cordial invitation. C. M. Kennedy, D. D. S., Secretary, 605 Citizens' National Bank, Des Moines, Iowa.

EXAMINATION OF DENTISTS FOR THE U. S. ARMY.

The Surgeon General of the Army announces that examinations for the appointment of Acting Dental Surgeons will be held at Fort Slocum, New York; Columbus Barracks, Ohio; Jefferson Barracks, Missouri; Fort Logan, Colorado, and Fort McDowell, California, on Monday, April 1, 1912.

Application blanks and full information concerning these examinations can be procured by addressing the "Surgeon General, United States Army, Washington, D. C."

The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between 21 and 27 years of age, a graduate of a dental school legally authorized to confer the degree of D. D. S., and shall be of good moral character and habits.

Acting Dental Surgeons are employed under a three years' contract, at the rate of $150 per month. They are entitled to traveling allowances in obeying their first orders, in changing stations, and in returning to their homes at termination of service. They also have the privilege of purchasing certain supplies at the Army commissary. After three years' service, if found qualified, they are promoted to the grade of dental surgeon with the rank of first lieutenant, and receive thereafter the pay and allowances appertaining to that rank.

In order to perfect all necessary arrangements for the examination, applications must be in the possession of the Surgeon General at least two weeks before the date of examination. Early attention is therefore enjoined upon all intending applicants. There are at present twenty-nine vacancies to be filled.

THE

DENTAL REVIEW.

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PRESIDENT'S ADDRESS.*

BY DR. EDMUND NOYES, CHICAGO, ILLS.

Mr. Vice President, Ladies and Gentlemen of the Northern Illinois Dental Society:—

In the name of the society and for myself, it gives me pleasure to offer to you cordial greetings and a hearty welcome to our twenty-fourth annual meeting. It will be twenty-five years in December next since this society was organized. It is a longer time since your president had any experience as a presiding officer. In view therefore of long disuse and very limited previous practice of the art he feels constrained to ask for your patience and tolerance for such errors and omissions as may occur in the performance of his duty. He asks it confidently, for the members of this society are all friends, and we welcome you with delight to the clasping of friendly hands, to the kindly words of friendly greeting, to the quickening pulse and kindling eye and smiling face that mark the sympathy and affection we feel for those we have met here year after year and have learned to honor and trust and love. When the State Society was reorganized, giving to every part of the state its own local society, the fear was expressed by some that there might be no further use for the Northern Society. Such fears have been proven to be unfounded, and our meetings since then have shown undiminished numbers, unabated interest and the continuance of the friendliness and good fellowship which have always been such conspicuous and delightful characteristics of our meetings. The number usually in attendance is about right, being enough to make the proceedings valuable and not too many for a general mixing, and familiar acquaintance of all the members with each other.

We are living just now in a time when dental societies are especially necessary and their usefulness ought to be greater correspondingly. Great changes are going forward in methods of practice, resulting from the introduction of casting by the use of a disappearing model and its application to the making of inlays, crowns and bridges. Changes also by reason of an increasing appreciation of the practicability and success of preventive or prophylactic treatment with a view to prevent teeth from decaying, and to prevent the beginning of the train of insidious and destructive changes usually characterized at first by inflammation of the gum margins caused by calcareous deposits, and ending in suppurative or otherwise destructive alveolitis; the various conditions and diseases for which the term pyorrhea alveolaris is often used as a general designation. In addition to these is the awakening sense of responsibility and duty to the general public, manifested especially in efforts for public education in dental matters and the examination of the mouths of the children in the public and private schools. The various activities which the public service commission of the State society are trying to encourage and direct, and one expression of which will be made tonight in the public meeting under the auspices of this society and the Winnebago County Dental Society, at which Dr. W. A. Evans, former health commissioner of Chicago, will give an address about "Teeth and Health."

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*Read at the twenty-fourth annual meeting Northern Illinois Dental Society.

Very few of the men now in practice ever heard very much about either of the subjects I have mentioned while students in dental colleges or offices. Consequently practically the whole profession are dependent upon the dental societies and the dental journals for whatever knowledge they obtain concerning them.

I wish, therefore to impress upon your minds that when the profession is in a state of transition, or, let us hope, of rapid evolution, as at present, it is more than usually needful that every one obtain the greatest help possible from both dental societies and dental journals. There have been several such epoch-making discoveries or inventions during the lifetimes of our older practitioners, each of which made radical, almost revolutionary, changes in the dental practice. The first of these was the application of vulcanite rubber to the making of plates for artificial teeth. Sixty years ago and previously all plates for artificial teeth were either gold or silver, or perhaps a little later, Dr. John Allen's continuous gum, and every dentist could work in gold, silver and platinum for the making of sets of teeth. My preceptor had done much work in the old ways and was rapid and skillful. He told me once, that while practicing in Westfield, Mass., a man and his wife drove in from a country town fifteen or twenty miles away to have an upper set of teeth made. They arrived by the time he was through breakfast and he took the impression, made dies and counters, made a gold plate by hammering a twenty-dollar gold piece on an anvil, swaged and trimmed the plate, arranged, backed and soldered the teeth, and sent her away before dark, wearing them in her mouth. Dr. Swain told me of even more rapid work he had done sometime in the fifties when he was practicing either in Aurora or Batavia. By the time I began the study of dentistry in 1865 my preceptor had laid aside all his skill and experience in metal work so completely that during the two years I was with him, though I think there was never a time when there was not one or more sets of teeth in process of construction, the only metal work done in that time was one partial gold plate, which I have always thought he made chiefly because he wanted to give me that much instruction in metal work and happened to find a patient whom he could persuade to have it done. This change in practice was so complete that for about twenty years following, until the introduction of the various forms of crowns which required the use of gold or platinum in their construction, there was probably not one man in ten who had in his office any outfit for making a metal plate, or who did a bit of soldering as often as once a year. It was realized by the older men that such a complete loss of skill in the working of precious metals was a great calamity to the profession, and that rubber had usurped a much larger field of application than rightfully belonged to it.

I believe there is some feeling of apprehension, and probably some reason to fear, that the gold inlay, with the help of a few porcelain ones occasionally, may as completely supplant the malleted filling as did the rubber plates those of gold and silver. If that should happen it will be a greater calamity to the profession, (and the public) than was the abandonment of gold and silver plates for teeth. It is to be hoped that this will not happen and it is not too late to prevent it, for the status of the gold inlay, the extent and the limitations of its use are not yet fixed and settled.

I am not now raising the question, nor trying to answer it, whether the exclusive use of rubber was better than the continued exclusive use of gold and silver plates would have been, nor whether the exclusive use of gold inlays would be better than the exclusive use of malleted fillings, but I wish to express the emphatic opinion that a continued use of both, with good judgment in the application of each will be far better for the profession and for our patients than if the malleted gold filling is allowed to become obsolete.

That the status of the cast gold inlay is not yet finally settled may be illustrated by what three different men have said to me within a year or two. The first, as much as two years ago, I should think, told me that he did not make any more gold fillings in the old way; that the inlay, in his practice, had entirely displaced the malleted filling. The same was reported in one of the recent journals as having been said by a well-known man in a discussion at a dental meeting in New York. Another man, sometime last winter or spring, told me that he had quit casting inlays and was making them by the old burnishing methods, and gave as the reason that he could make them better and quicker in that way. Still another man told me that he had seen so many gold inlays that had come out (probably most of them those of other men, but presumably also many of his own), that he had ceased to make them altogether and was malleting all his gold fillings in the old way. These serve to show the different conclusions arrived at by different men as a result of their experience and observation.

Let us consider for a moment who are the men who may logically be expected to discontinue the making of malleted fillings. There is a large majority of the men practicing dentistry throughout the United States who cannot or do not make gold fillings as well as they ought to be made. How large the observations of forty years have led me to think that majority is I will not dare to say in public, it is guess work anyhow. It is large enough to easily out-talk and out-vote the remnant who can and do make gold fillings well. All of this great multitude may fairly be expected to put inlays in every place where they do not put cement or amalgam or make crowns, and probably they ought to.

I believe there are a larger number and a greater proportion of the men in the west and northwest who make gold fillings successfully than in other parts of the country. I do not know personally enough about the teaching in all the schools to say anything very positively, but it is my belief that the Chicago schools, and perhaps some others in the west, teach gold filling more scientifically, with greater definiteness and minuteness of detail, and require a greater amount of that practice in their infirmaries, to which they give closer supervision and more careful instruction than is the case in most of the dental schools. Besides this there is in the northwest a coterie of men known as the G. V. Black Dental Club, who, under the tutelage of Dr. Wedelstaedt have become magnificent gold operators.

Probably most of the large majority who have never made any good gold fillings are themselves wholly unaware of their own deficiencies but occasionally one of them speaks up boldly in some meeting and affirms that filling teeth with gold with a view to their permanent preservation is a failure. Such a statement made in one of our western societies would meet instant challenge and denial.

The scientific and the practical problems relating to the gold inlay have not all been solved as yet. The question of shrinkage and expansion is one of them. The shrinkage of gold from the temperature of solidification down to that of the mouth is a pretty definite proportion to its mass and fairly well ascertained, but the shrinkage or expansion of wax and investment, the relation of these to temperatures, and especially the practical problem of counteracting the shrinkage of gold by the expansion of either the wax or investment or both, has no solution as yet. Dr. Price has reported some experimental work toward that end. Perhaps most men are disposed to ignore the shrinkage of gold as of no consequence, but occassionally when we make a mesio-occluso-distal inlay for a bicuspid or molar, we are unable to ignore it for it will not go to its place and we have to saw it apart, adjust the two parts independently and unite them with solder in their new positions, or we make one proximo-occlusal inlay and then the other locking it over into the first one.

The most useful field for gold inlays is in large proximo occlusal cavities in bicuspids and molars and large buccal cavities in the same teeth. Small cervical cavities in the incisors, cuspids and bicuspids I believe can be better filled than inlaid if they are readily accessible and moisture can be controlled. The same is true of all fillings in the incisors and cuspids that are so small as not to require any sacrifice of the labial or lingual angle of the tooth, and I believe many of the larger ones (if they do not have porcelain) can be more securely anchored than can inlays.

The whole line of pit cavities in molars and bicuspids, if filled as they should be, before there is any decay of consequence in the dentine, are better filled than inlaid. There will also be a few fairly large but shallow cavities in bicuspids or molars having small necks, decayed broadly near the gum margin from buccal to lingual that are better to be filled than inlaid because the entire proximal overhang would have to be cut away in order to draw a wax model. If I am correct it will be admitted that conservative men are not in danger of forgetting to use their pluggers.

The cast inlay work is so new that it was not in the schools when those now in practice were students, and we are wholly dependent on the papers, discussions and clinics of dental societies, and articles in the journals, for a knowledge of the physical facts and laws, and the science that coördinates these and relates them to the inlay operation, also for instruction in the minutiae of technical details so that we may acquire a routine of procedures that we can carry out with positiveness and accuracy, after awhile approaching perfection by a similar process to that we have followed heretofore in other operations. There is besides much needed information to be gained which may guide us to a wise choice of the materials and apparatus to be used, for there are on the market and extensively sold a large variety of waxes and investment compounds of greatly various degrees of merit, or the want of it.

Oral prophylaxis as promulgated by Dr. D. D. Smith of Philadelphia and those who have followed him more or less closely is not a revolutionary proceeding like the casting of inlays. The facts and principles on which it is based have been fairly well recognized and acknowledged by everybody for a long time. It contemplates carrying out far more extensively and with much greater thoroughnses and frequency operations we are all more or less familiar with. I suspect that most of us have not yet made any very important changes in this direction in our our daily routine of practice. If it is really possible to take charge of young children and care for them in such a way that proximal decays will never appear between the incisors nor the bicuspids and molars it ought to be tried extensively enough to establish its practicability. I must confess to being behind the times in this line of practice and I have no cases to report in which I would dare to claim that immunity has been due to the polishing of the proximal surfaces at my hands.

If there are those who have accomplished such results they should preach about it frequently until the details of the procedure and management are well enough undersood for men to modify their routine habits of practices to such extent as may be necessary. There are some men here who could probably speak instructively on this subject.

I will say but little at this time about the awakening sense of public duty that is showing itself more and more in various ways. The public meeting this evening is one example of it and the publicaion of articles on dental subjects in newspapers extensively throughout the state is another. This is intended to give to the people, among other things, authentic information upon some of the matters that are coninually misrepresented in the advertisements of the dental quacks, and it ought to be continued and persisted in to a somewhat similar extent as the quack advertisements are. It is "team work" which can be done by dental societies but not by individual dentists and its purpose is for the mutual benefit of the people and the dental profession. The most important public service we can render at present, (and this also will benefit both the people and the profession) is in the examination of the mouths of children in the schools. This should be done at regular intervals and established on a permanent foundation. It will probably have to be followed in the end by the establishment of dental infirmaries in which dentists will be called upon to give gratuitous services in a somewhat similar way as physicians have long been doing in the numerous dispensaries and hospitals.

Probably you all knew beforehand what you came here to get, and what I have said is not very much needed, but the president had to say something and perhaps those who follow me may discuss some of the matters I have done little more than to enumerate.

SOME NOTES ON THE INTERPRETATION AND TREATMENT OF CERTAIN TYPES OF INFECTION.*

BY FREDERICK B. MOOREHEAD, A. B., D. D. S., M. D., CHICAGO.

Viewed from every angle, inflammation is the largest subject in the world of pathology. There is but little left of pathology after inflammation and neoplasms have been removed.

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*Read before the Chicago Dental Society, December 19, 1911.

It will in no way serve the purpose of this paper to raise any discussion as to the training of the dental student in the subject of pathology; the physician's knowledge of oral pathology; the interdependencies of the mouth and the composite organism; the relative merits of mechanics and pathology in dental practice, etc., etc. And yet, the occasion is before us when a statement ought to be made on this very point.

The dental profession is forced to consider the question because of the recent quickened interest in mouth conditions on the part of the public. The situation as it is now developing will resolve itself into three possible solutions. First, a more adequate and comprehensive training of the student of dentistry; second, a recognition of the situation on the part of the medical college with definite courses in oral pathology designed to as thoroughly prepare the physician in this as in other medical specialties; third, the preparation of medical men who shall devote their entire time to the mouth and its adnexa.

No one who is carefully watching the "signs of the times" can fail to appreciate the fact that the issue is both pertinent and pressing. There is one outstanding fact in dental practice, viz: the practitioner who is by natural endowment a mechanic, and whose chief interest and pleasure lies in the development of operative and prosthetic dentistry, is not likely to develop any special skill, or power of interpretation, in the field of theoretical and applied pathology. Each of these two dissimilar interests is large enough to be master of both the time and intellect of the individual. How then can one serve two masters? "If he serves the one, he will despitefully use the other." This "serving the one" and "despitefully using the other" is a manifest weakness in dentistry today. The pity of it is, the average patient has these two master interests with but one servant to do his bidding.

While the foregoing is, in a measure, adventitious, it must stand here as the context of this discussion.

CHRONIC INFECTION.

Under this head is placed two distinct types. First, ordinary pus infections in which there is some interference with the process of healing, such as necrosis, excessive granulation tissue, faulty nutrition, chronic intoxication, etc., leading to hyperplasias and hyperexostoses. Second, the granulomata; syphilis, tuberculosis, actinomycosis, leprosy, glanders and rhinoscleroma. We shall be obliged to dismiss the chronic inflammations with a word. Hyperplasias and hyperexostoses are usually the result of maltreatment of acute infections which will be discussed at length later. When we state that there is no satisfactory treatment for these end results of chronic inflammation, ignorance and indifference are at once indicted. Because of their nature and character, we can discuss the granulomata by title only, at this time.

ACUTE INFECTION.

There are two determining factors in every infection. First, the virulence of the invading organism, and second, the general resistance of the host. An early interpretation of these two equally important elements, in every case of infection, is of paramont importance both to the patient and practitioner. Indeed, the greatest measure of success, in handling this class of cases, depends largely upon one's ability to correctly measure the strength of each of these two forces in a given case. Intelligent treatment always presupposes a definite conclusion in the surgeon's mind as to the relative strength of the two elements.

The ordinary avenues of infection are first, the root canal; second, alveolar process; third, impacted teeth, especially lower third molars; fourth, blood stream; fifth, compound fractures.

ROOT CANAL.

The order of sequence is two-fold. Infection through caries, followed by an acute pulpitis, pericementitis, and a rapid suppurative process at first limited to the peri-apical tissues, and quickly extending to the surrounding tissues. Such a picture is usually produced by a more or less virulent staphylococcus. The organism is present in most cases where suppuration is marked. The ordinary symptoms produced by acute infection are present, and in keeping with the virulency of the organism. The pus finding its way through the alveolus comes in contact with the periosteum. It passes through this tissue and the overlying mucosa, in most instances, and quickly appears on the surface. The symptoms rapidly subside and the patient becomes comfortable.

SUB-PERIOSTEAL ABSCESS.

In a given number of cases the periosteum is unyielding, due either to the fact that it is thicker or more dense. The pus collects beneath it and lifts it from the bone. This changes the entire complexion of the case. Every symptom is more severe, the swelling is diffuse, a sense of fluctuation is elicited only on deep pressure. The underlying bone is always in danger under these conditions, and unless the pus is evacuated early, necrosis results from the shutting off of the circulation, together with the direct harmful influence of the bacteria and their toxines. It is obviously important therefore, to recongize early whether the pus has penetrated the periosteum or has collected beneath it. The dangers of an extensive sub-periosteal abscess are far-reaching. Two clinical histories will illustrate.

Minnie B., age 17—referred to us in December, 1909. Several days previous to her first visit, she had an infection through a lower central incisor. When we first examined her, she had a temperature of 102-5 and was markedly toxic. There was an extensive swelling involving the lower jaw and extending as low as the cricoid cartilage. The mass was hard and the integument shiny and tense. On deep palpation an indistinct sense of fluctuation was felt. Three or four incisions were made in the region of the labial reflection. An appreciable quantity of pus was evacuated. The tissues were freely irrigated with sterile hot normal salt solution. Introducing a steel probe through the various incisions, the entire labial surface of the bone was found to be denuded of periosteum. The patient was in the hospital and received careful attention. Hot moist dressings were applied externally and the parts irrigated with normal salt. A number of submental abscesses developed from time to time and were opened externally. Later on teeth loosened and had to be removed.

The sequestra involved the entire body of the bone from the second bi-cuspid on one side, to the first molar on the other. Under the most vigilant asepsis the vitality of the labial periosteum was preserved and a labial involucrum was formed. The contour of the jaw was preserved by the use of plaster bandages. The sequestra were removed from time to time and the patient was discharged from the hospital in eleven weeks. While recovery is complete, the patient has a very prominent jaw.

Mr. B., age 42, living in Michigan, developed an infection in connection with the right superior second bicuspid. He had a throbbing pain beginning Thursday evening, which grew worse during the night. The following morning the right cheek was swollen. The family physician made an incision, but failed to discover pus. The pain and swelling increased. On Sunday the entire side of the face was involved and the right eye closed. We saw the case Monday afternoon. The temperature was high and the patient distinctly septic. A diagnosis of sub-periosteal abscess was easily made, and confirmed, when the pus was evacuated. The periosteum had been raised from the entire surface of the superior maxillary bone. The pus was washed out and the cavity freely irrigated with normal salt solution. The periosteum reunited with the bone around the edges, reducing the surface about a third. The balance of the bone remains denuded and will be exfoliated. These two patients represent a class of cases which call for a definite early interpretation. Even where the periosteum has been torn loose, if the pus is evacuated early and the cavity freely irrigated with normal salt and the focus of infection removed, either by disinfecting or extracting the tooth, or teeth, involved, no permanent harm will result. The periosteum will become re-attached and the bone saved.

There are two other important elements in the treatment of these cases. First. the gastro-intestinal tract should be emptied by the free use of Salines. This will relieve the blood pressure and the tension in the tissue involved. Large hot moist dressings should be applied externally. This will determine more blood to the part, and increase phagocytosis.

HAEMATOGENOUS INFECTION.

The second type of infection is haematogenous in origin. The pulp of a perfect tooth may die from many causes. Infection occurs through the blood stream. The only characteristic of this group of cases is the mode of infection. Some are disposed to take the position that microorganisms always enter through the tissues. Haematogenous infections, however, are not difficult to demonstrate. Given a case of specific urethritis followed early in the history by a monarthritis. A bacteriological study of the fluids obtained from the joint reveals the Neisser coccus. If microorganisms can reach the peri-apical tissues and infect a dead pulp by penetrating a healthy epithelium, sub-mucosa, periosteum and alveolar process, or by penetrating normal cementum and dentine, enormous numbers of bacteria are present in the tissue at all times. This, of course, is obviously not the case. That a limited number of microorganisms do gain entrance to the circulation and give rise to infections at points of local irritation or lowered resistance is doubtless true.

ALVEOLAR PROCESS.

Again, infection may occur through the alveolar process even where the teeth have vital pulps. Deposits on the roots of teeth act as irritants and the soft tissue become detached. The impact of food in mastication forces the bacteria into the tissues. We do not refer here to so-called "pyorrhoea pockets." The mouth may be in good condition; every tooth may be vital and solid. The deposit of tartar may be limited to one surface on a single root. Here again we may see a haematogenous infection, in cases where tartar forms on the root and the gum tissue remains firmly attached to the pericementum. There is usually, however, some point where the gum has become detached. The suppurative process is usually limited, but may be extensive. The irritant is frequently overlooked and recurrent abscesses develop. It is no less necessary to remove the tartar than to remove a putrescent pulp, both being responsible for infection.

IMPACTED TEETH.

In this whole question of pus infections there is no more serious consideration than impacted teeth, particularly the lower third molar.

These teeth are a source of great danger to the patient, and should be removed in all cases. Paradoxical as it may seem, the most successful method of treating an impacted lower third molar which has become infected is to remove the tooth before infection occurs. When infection does occur, it must be cleared up in every instance before any attempt is made to remove the tooth.

In the process of mastication, particles of food are forced under the flap of gum tissues which overlies the crown of the tooth on the disto-occlusal surface. A pocket is thus formed between the tooth and soft tissues. This pocket is an ideal place for bacteria to grow. The essentials, heat, moisture and pabulum are present. If the organism is at all virulent a sharp inflammatory reaction occurs. The Masseter muscle and overlying tissues are quickly infiltrated. The jaw is fixed in occlusion. If it is a staphylococcus infection suppuration occurs early. The pus gravitates and collects beneath the angle of the jaw. Such a condition presents two possible dangers. Pus may penetrate the deep cervical fascia and enter the mediastinum, terminating the life of the patient. Or, edema of the glottis may result from an interference of the return circulation by pressure. Edema of the glottis is always a grave condition.

In both instances the patient should be in bed, preferably in a hospital. The bowels should be freely opened by calomel, followed by a saline. The pocket behind the tooth should be thoroughly irrigated with a normal salt solution and disinfected by using a 25-per cent aqueous solution of tincture of iodine. Large hot moist dressings should be applied externally and changed at least every two hours. In the case of edema vigorous sweating is urgently indicated. In extreme cases a low tracheotomy may be necessary. The pus when present must be evacuated. Every abscess should be opened as soon as a diagnosis of an abscess can be made. "Ubi pus ibi evacuo." In opening these abscesses around the angle of the jaw, we elect the point indicated by palpation. If the abscess is high and can be reached from within the mouth, an intra-oral incision is chosen. If, however, the pus has collected beneath and behind the angle, an incision from within the mouth is contra-indicated, and for two reasons: First, drainage is imperfect because of distance and direction. Second, too much tissue is opened up in making a deep incision from within the mouth to reach an abscess beneath the jaw. The surrounding tissues are protected by a round-cell infiltration. This protection is weakened by a deep incision through immune territory, and if the organism happens to be virulent, the infection may spread rapidly. The patient must not be sacrificed for an intra-oral incision.

COMPOUND FRACTURES.

A distressing group of cases is furnished by compound fractures in which virulent infections occur. One has here a two-fold problem—the treatment of the infection and the treatment of the fracture. It is usually the best plan to clean up the infection before making any attempt at treating the fracture. The location of the fracture, the type of infection and the form of immobilization, will largely govern the treatment in the individual case. It may be stated in general, that the mouth should be made and kept as clean as possible. Hot moist dressings will do much to control both the pain and infection. The seat of fracture should be freely irrigated with a warm normal salt solution and continued until all trace of infection has disappeared.

Under the head of sub-acute or chronic infections there are two lesions both characterized by chronicity, and frequently seen in general practice. Both of the lesions may be overlooked unless the practitioner is methodic in his examination of every mouth which comes under his care.

BONE CAVITY.

The first of these is the well-known bone cavity which results from the liquefying and peptonizing power of bacteria and their products. The pathology and treatment of this lesion is so well established in oral surgical practice that no comment is necessary here. The only emphasis which we care to make is, the constitutional effects resulting from the absorption of toxines found in these cavities. We are learning in these days that the tonsil gland is by no means the most important consideration in the question of local foci of infection in their relation to constitutional disturbances. As Dr. Gilmer suggested, in a recent paper before the Chicago Medical Society, we shall not arrive at a satisfactory conclusion in this question until we are able to study these cases jointly with the internist. Then, and only then, can a correct estimate be made in the premises. The importance of the recognition and disinfection of these bone cavities can hardly be overstated.

CYSTOMA.

Second, in this class is the cystoma. We have to start with, a putrescent pulp canal. The organism is of low virulence, and the irritation set up in the peri-apical tissues results in a rapid multiplication of the fixed connective tissue cells. A limiting wall of new connective tissue is formed completely enclosing the infected area. Epithelial cells from the embryonic remains of the tooth organ are accidently incorporated in this new formed sac. These also multiply until the sac is lined with a coat of epithelium. The secretion causes the sac to gradually expand, filling the apical space. Further expansion causes a pressure atrophy of the surrounding bone. The extent of the cyst formation and the destruction of bone are in direct relation to the age of the infection. There are two important points in the diagnosis. First, the X-Ray picture shows a cavity in which there are no ragged margins. The walls are clear cut and definite in outline. The cavity has a "punched out" appearance. On palpation there is either a "parchment crackle" due to a thinning of the bone, or a distinct fluctuation when the bony wall has been destroyed. Treatment here is simple. Two forms may be employed.

The contents of the cyst may be removed with an aspirating syringe and the epithelium destroyed by using a cauterizing agent such as phenol or formalin. The sac may then be filled with bismuth paste. A much better method however, is to incise the cyst and completely remvoe the sac. The bone cavity is disinfected with tincture of iodine and filled with bismuth paste, which is replaced as often as may be necessary until the cavity is obliterated.

NEURITIS.

A somewhat unusual type of infection is that which involves the inferior dental nerve, giving rise to a localized neuritis. The neuritis may be caused by arsenic or infection. There are two diagnostic elements in the symptoms of this lesion. First, the intensity and chronicity of the pain, and second, the sensory phenomena in the tissues supplied by the terminal branches, the incisor and mental nerves. In two cases which recently came under our observation, one was caused by arsenic and the other by infection. In the first case arsenic had been applied to the pulp of the lower right third molar. Nothing unusual occurred until the pulp had been removed and a bland treatment applied in the usual way. A severe pain developed extending over the right side of the jaw and radiating to the ear and temporal region. This persisted for ten days, when it gradually subsided under treatment. At the present time the pain has entirely disappeared. A slight burning sensation and analgesia in the right half of the lower lip persists. This also will gradually disappear.

The other case was a prominent Chicago physician who had a putrescent pulp in a lower right bi-cuspid. The case became very painful and a slight swelling occurred. He went to his dentist who opened the tooth and sealed in a disinfecting agent. The pain and swelling increased, and the tooth was removed at the patient's request the following night. He was suffering intense pain when we saw him the second day after the extraction. There was a small induration on the buccal aspect of the jaw. The area was markedly hyperemic and tender to pressure. There was no pus present at any time. The right half of the lower lip was analgesic. These cases are typical of a number which we have seen the past two years. The treatment consists of thorough catharsis; hot moist dressings applied over the affected side of the lower jaw, and morphine.

In the milder cases a less potent drug may be tried, but in the severe cases, the pain yields only to morphine. Rest in bed, on a light diet, is indicated. In none of the cases which we have seen has there been any permanent disability. Analgesia may persist for several months, but the normal sensation of the parts return in all cases. Occasionally following the extirpation of a pulp, and the filling of a root canal, a patient will complain of tenderness and pain for several days and sometimes for weeks. There will be no swelling or other evidence of inflammation. There are usually cases where there has been some irritation of the nerve trunk, and in the milder cases there may be an absence of sensory phenomena in the terminal branches. Time alone is the therapeutic agent in this milder group of cases, observing of course the ordinary laws of hygiene and elimination.

SEPTICEMIA.

There are two other types of infection which we would briefly emphasize. First, the streptococcus and pneumococcus which we will discuss together since they do not differ essentially in clinical findings. These two organisms are more closely related than we have been led to believe. The streptococcus viridans is probably a modified pneumococcus. A single case will illustrate the point. We saw a case in consultation October 6th, 1911. The patient was a girl 7 years of age. She was taken by her mother to the family dentist on account of pain in a right superior pre-molar. He opened into the tooth which was badly decayed and contained a dead pulp. Desiring to save the tooth, if possible, he carefully cleansed and disinfected the pulp chamber and sealed an essential oil in the root canals. The child got no relief and returned the next day. This time there was considerable swelling. The dentist removed the dressing and made an incision in the soft tissues, hoping to find pus. There was none. We saw the little patient on the third day and had her removed to the hospital. The swelling extended over the entire side of the face. The right eye was edematous and completely closed. Temperature 105. It was a case of septicemia almost from the beginning. On the second day in the hospital there was evidence of a localized gangrene. Examination of the necrotic tissue showed numerous streptococci, and a few staphylococci. The edema and swelling increased until both eyes were closed. The right ear was very edematous. The temperature reached 107.8 per rectum. The patient died on the seventh day after entering the hospital.

Dr. Rosenow obtained a pure culture of a virulent pneumococcus from the heart blood post mortem. It would be clinically impossible to differentiate such a case from a streptococcus septicemia. The high temperature, rapid pulse, edema, toxemia, etc., are identical in both infections.

While such an infection is always serious, an early interpretation of a given case, with active hospital treatment, secures for the patient the greatest possible margin of safety.

In a staphylococcus infection, pus forms early, and the indication is free incision and drainage. In an infection due to either streptococcus or pneumococcus, an incision into the tissues is dangerous. Where the organism is highly virulent the picture is one of septicemia, the patient dying without pus formation. If, however, the organism is less pathogenic, metastatic abscesses may occur. If there is a definite abscess formation, it must always be evacuated, even in a streptococcus infection, but the usual picture is a large hard swelling with marked constitutional reaction without pus. Here it is unsafe to insice the tissues. To differentiate this condition from a sub-periosteal abscess, while frequently difficult, is vitally important. In one case free incision and drainage is indicated, in the other contra-indicated. It is as imperative not to open the tissues in one case, as to open them in the other. Here again, interpretation is paramount.

BACILLUS FUSIFORMIS.

The other organism we wish to discuss briefly, is the Bacillus fusiformis. Under ordinary conditions this organism possesses no special virulency. Under favorable conditions, and associated with other organisms, it frequently assumes a serious character.

Just what the special elements in this peculiar type of infection are, we are not certain. In one case it may possess no virulence, but become pathogenic when inoculated with some other organism. The class of cases in which the fusiform bacillus is chiefly responsible is characterized by a more or less diffuse brawny swelling. The onset and general reaction may be sudden or gradual depending upon the virulence of the associated organism. Pus formation is not in keeping with the induration. When abscess formation does occur, the swelling and induration are not materially affected by incision and drainage. The swelling persists and the tissues remain hard. The mass does not soften and break down under the influence of hot moist dressing. This form of treatment does not hasten suppuration or apparently stimulate local phagocytosis. Longevity appears to be the principle characteristic of the infection. It is also characterized by recurrence. The mass frequently grows less and less until it almost disappears. A slight induration remains. Without any apparent reason the infection suddenly "lights up." The recurrences, however, usually end in a limited suppuration. The organism works its way into the tissues in all directions, and acts as an irritant to a point of causing a definite round-cell infiltration. The principle difficulty in treatment is due to the fact that it is an anaerobe. The rise in temperature and pain depend largely upon the bacterial complement. The treatment, in the absence of suppuration, is largely expectant. When pus does form, a thorough-going bacterial study should be made. In this study the ordinary routine measures are inadequate. The skill of the trained bacteriologist and an adequate laboratory equipment are required. We cite here briefly two cases, illustrative of this type of infection.

A little boy three years of age, was taken ill with an obscure affection, in the summer of 1910. A tentative diagnosis on influenza was made, although no cultures were obtained. The progress of the little patient's illness was characterized by periods of improvement followed by relapses. At one time he would apparently be convalescent. The temperature would disappear for a time, or become nearly normal. This would be followed by a return of the temperature, loss of appetite and irritability. At times an enteritis and enterscolitis would appear. Needles to say "Many men of many minds" saw and prescribed for the little fellow. We saw him in consultation with the attending physician August 23rd. One of the pre-molars had become loose and dropped out. The other pre-molars in both jaws were loose. Pus was discharging freely from both alveolar processes. Acting in a consulting capacity we suggested a careful examination of the pus, which was made. The junior interne on the service reported the ordinary organisms. A second study was requested with a similar report. The patient was anesthetized and the loose teeth all removed. When this was done, the discovery was made that the infection extended to the buds of the permanent teeth. Pus pockets had formed even beyond the permanent teeth. These pockets were all carefully curetted and disinfected. Many of the partly formed permanent teeth had to be removed. Following the operation the patient made satisfactory improvement. He gained in weight, his appetite improved, and it seemed for several weeks that he would entirely recover. This improvement was only transitory however. A secondary anemia developed, the haemoglobin going down to 30 per cent. Death occurred fourteen weeks after the operation. The bacillus fusiformis was discovered post mortem.

Mr. H., of Oskaloosa, Iowa, was referred to us by Dr. B. F. Redman and admitted to the Presbyterian Hospital May 2, 1911. Five weeks previous he had an infection located in soft tissues at the angle of the lower jaw. The focus was in connection with an impacted third molar. There was a large brawny swelling, with no evidence of suppuration. The jaw was firmly fixed in occlusion. Large hot moist dressings were ordered, changed every two hours. The mouth on the affected side was irrigated with a hot normal salt solution every two hours, alternating with the change of dressing.

The patient was placed on a light tray and the bowels kept freely open. At the end of four weeks' treatment the swelling had subsided and the patient could open his mouth to a limited extent. The tooth was removed under ether anesthesia June 5th. Following this the swelling returned and the jaw again became fixed. The above treatment was continued and the mass again slowly disappeared. The patient left the hospital and returned home June 25th. He returned June 29th, with an extensive swelling, considerable pain and a temperature of 102. This time there was some softening below and behind the angle of the jaw. Under nitrous oxide gas anesthesia an incision was made and a small amount of bloody pus obtained which was sent to Dr. E. C. Rosenow for examination. The pus obtained immediately and 24 hours after operation (on the sterile dressings) showed in the fresh state a large number of actively motile spirochetes, long thread-like non-motile bacilli which differed greatly in length, and a large number of diplococci often in short chains. The aerobic cultures yielded only diplococci while the anaerobic cultures on blood agar yielded fusiform bacilli, some spirilla and diplococci often in short chains. The former had only a slight motility after 48 hours cultivation and showed many small deeply staining budding forms. It was impossible to separate the bacilli from the cocci at this time. The cocci were identified as streptococcus viridans. A point of fluctuation developed lower down on the side of the neck which was incised July 18th. The pus obtained showed a similar bacterial flora except that the spirochetes and fusiform bacilli were present proportionately in larger numbers and that the aerobic cultures remained negative while the anaerobic cultures showed a few spiral forms and many fusiform bacilli together with some coccus forms. The virulence of the microorganisms found in this sample of pus was tested by injecting a suspension of it in Nael solution subcutaneously into a guinea pig. The animal died at the end of 7 days with marked infiltration of pus in which a similar bacterial flora was found. It was from this culture that a vaccine was prepared. A blood culture was made 3 hours after the second abscess was opened. One half of the flasks of broth and blood agar were incubated at 37 C under aerobic and the other half under anaerobic conditions. The former remained permanently sterile while the latter yielded a pure culture of bacilli which corresponded morphologically and in staining reactions to B. fusiformis. Subcultures on goat, sheep and human blood agar and on Loeffler's serum unfortunately proved negative.

From the above evidence there can be no question first, that this case was of anaerobic infection and that the aerobic cocci found in the first specimen of pus were secondary invaders from the mouth with which the abscess connected indirectly, and second, that B. Fusiformis was the anaerobe chiefly responsible because found in pure culture in the blood. On the other hand, whether the spirochetes which showed active motion and the coccus forms obtained anaerobically from the second sample of pus were distinct species is still uncertain. The drainage of two abscesses did not have much effect on the swelling. The mass remained hard and about the same size. Dr. Rosenow prepared a vaccine from the bacterial flora, which had a marked influence on the infection. The softening and reduction in size of the mass was very striking. The patient was discharged from the hospital August 30th, with only a slight induration and a satisfactory excursion of the jaw. He is entirely well at the present time with no trace of the infection. The injections were continued from July 25th to October 25th.

All chronic infections, especially those characterized by induration, should be carefully studied for this organism. That it is responsible in most cases of this type of infection we have but little doubt.

In fine, the points which we wish to emphasize are:

1. An estimate of the virulence of the invading organism and resistance of the host in all cases of infection. A detailed study of all cases of infection, from the standpoint of bacteriology and clinical evidence, will give one, after a few years of experience, a good sense of discrimination.

2. The early recognition, in every acute abscess, of the relation of the pus to the periosteum.

3. While haematogenous infections are usually attenuated, they may be virulent in character. A streptococcus of high virulence may be found.

4. The dangerous character of infections associated with lower third molars. The patients' interest alone must influence us in electing a point to incise these abscesses.

5. A careful study should be made of the effects of suppurating bone cavities on the general health of the patient. Results of treatment should be noted.

6. Infection of the inferior dental nerve or a neuritis caused by arsenic, call for very definite treatment. The differential diagnosis from a simple pericementitis is very important.

7. The danger of incising the tissues when the infection is due to a streptococcus in the absence of a definite suppuration.

8. All brawny swellings showing signs of chronicity should be studied for the bacillus fusiformis. The question of vaccination should be seriously considered in this type of infection.

9. All cases of extensive acute abscess formation, of whatever type, should not be treated as ambulatory cases. The patient should be in bed; the bowels freely opened; hot moist dressings applied, and the pus evacuated as soon as it can be diagnosed.

10. Interpretation is the highest art in medicine. It is the best expression of a composite knowledge and men may acquire it.

RATIONAL TREATMENT IN DISEASES OF THE MAXILLARY SINUS.*

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So much has been written upon this subject and the opinion of different authorities have been so varied, one would naturally think the ground had been thoroughly covered. It is not the object of this paper to cover the subject entirely, or to refer to the various articles that have been written, but rather to give a brief description of the maxillary sinus, and its relation to the teeth, with a simple method of procedure in the treatment of those cases that are of dental origin.

The antrum is the largest air cavity associated with the nasal chamber and is situated in the body of the maxilla. It varies in location, size, and in the thickness of its walls according to age, race and the presence or absence of teeth and tooth-germs within the jaw. It often varies in the two sides of the same subject; its capacity being from two to eight drachms. It is lined with a delicate and poorly nourished mucous membrane, which is continuous with the nasal membrane through a small opening, the ostium maxillare. This foramen is oval-shaped and is found on the upper edge of the proximal wall near the anterior portion of the antrum. In rare cases the antrum is missing on one or both sides. The floor of the antrum is usually uneven, owing to the presence of partial septa and conical elevations over the roots of the molars, sometimes over the bicuspids and less frequently over the cuspid teeth, and it may descend between the roots of the molar teeth, a condition more common among the white race than the negro. In the negro skull, these elevations over the roots of the teeth are seldom found because of the thickness of the bone. The floor of the antrum is concave from side to side and also in the anterio-posterior direction, having a basin-like form, and is usually below the level of the nasal chamber. Because of the close anatomical relationship of this sinus with the apical portions of the roots of the teeth, it is quite evident that if the pulp of a tooth so related to the antrum should become diseased, the parts around the apical foramen might also become infected resulting in suppurative changes in the antrum.

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When we understand the relationship existing between the nasal fossa and the intramural sinuses, we readily see how any one or all of them, through continuity of tissue, may be involved in disease originating in the nasal fossa. We can also understand how the antrum may be involved in disease through a purulent discharge from either the frontal, ethmoidal, or sphenoidal sinus, finding its way into the antrum. Fillebrown and Cryer have demonstrated that through abnormal anatomical development, the frontal sinus occasionally communicates directly with the antrum. In a case of this kind if the frontal sinus should become diseased, the pus would be discharged into the antrum. This fact should be borne in mind in seeking for a cause of purulent secretions found in the antrum when the etiology is obscure. The history of each case should be carefully examined to discover the origin of the disease.

There is a difference of opinion regarding the part diseased teeth play in causing suppuration of the maxillary sinus. Antral disease of dental origin is thought by some to be of rare occurrence My experience and observations of many cases in different clinics leads me to believe that chronic suppurations of the antrum are generally caused by infected roots in connection with the second upper bicuspids and the buccal roots of the first and second molar teeth, occasionally by the teeth anterior to these.

The diseases to which the maxillary sinus is subject, other than constitutional, are catarrhal, influenza infections, suppurations, cysts and neoplasms. Suppuration is by far the most common and it may be acute or chronic, and is usually the consequence of a diseased tooth or of an infective rhinitis or ethmoiditis—though there are cases in which suppuration follows traumatism or is the result of a foreign body in the cavity. The symptoms in acute suppuration differ but slightly from the chronic—pain, tenderness, and swelling being more apparent in the former. The pain may be in the teeth, upper jaw, nose, or confined to the frontal region and radiate over the entire side of the head. Tenderness may be elicited by pressure over the canine fossa and the point of exit of the infraorbital nerve. Close observation will occasionally show swelling over the buccal process of the affected side. A sense of fullness or weight, particularly in leaning over; frequently an odor and discharge of bloody pus or mucus through the nose, especially when the patient coughs or sneezes, or when they lie in a certain position. Lacrimation and photophobia are usually present, and congestion of the conjunctiva may be observed. Slight elevation of temperature coexists. The use of the X-ray and the small electric mouth-lamp, while by no means positive, are valuable aids in making the diagnosis. Tapping the antrum with a trocar is permissible in doubtful cases.

The treatment is of two kinds—surgical and medicinal. In considering which method of treatment to follow three points must be observed. 1st. Is a diseased tooth the cause of the trouble or is it entirely of nasal origin? 2nd. Is the infection of recent origin, resulting in an acute suppuration? 3rd. Is the infection of long standing and has it involved the mucous membrane lining the antrum? The following is the treatment for cases of dental origin: If a tooth has caused the trouble it is not always necessary to remove it. Frequently by treating the affected tooth and opening into the antrum and washing out the cavity, the case will yield readily. Many teeth have been needlessly sacrificed in the surgical treatment of diseases of the antrum, especially by general surgeons, while on the other hand. many antrums have become chronically diseased, a condition that might have been avoided and the case cured in its incipiency, had it not been for the conservativeness of dentists in their efforts to save the tooth. It should be remembered that important as every tooth is—a healthy antrum is of greater importance.

If the teeth can be saved, the operation should be made by making a semi-circular incision through the mucous membrane and periosteum, extending from the first bicuspid to the second molar convexity on a line with the floor of the antrum which corresponds with the duplicature of the gum tissue and mucosa of the cheek. The mucosa and periosteum are now separated from the bone and elevated with a periosteotome exposing the bone. With a trephine or bone bur, cut directly through the thin bony wall at a point above and between the roots of the second bicuspid and the first molar, directing the cutting upward and backward—enlarging this opening with a fissure bur until the little finger can enter the cavity. By digital examination of the sinus, some idea of its condition can be obtained. The hemorrhage may be controlled by dipping plain gauze in hot water and packing the cavity a few minutes. Then with proper light one may make a visual examination and ascertain the exact condition. The fear expressed by some that such a large opening may injure the contour of the face or that it may not completely close, is not well founded. Unless the cavity is well packed it will close far too soon to permit the treatment to be sufficiently prolonged. In suppurations, there is usually some polypoid degeneration and partial septa of bone which is diseased, and in making a large opening you have the advantage of making a thorough examination and curetting all diseased tissue and denuding the walls if it seems necessary, this permits the cavity to fill up with healthy granulation.

If the case is chronic and does not yield to palliative treatment a thorough curetting is necessary, for if the necrotic tissue is not removed, drugs will be of little use. The after treatment is quite as important as the operation. The antrum should be irrigated daily with at least a quart of warm, mild solution applied by means of the fountain syringe or irrigator that has a soft rubber tube on the end connecting it with the larger tube of the syringe. Being flexible it causes less pain in introduction, is directed easily, and washes out all parts of the cavity. The writer prefers a normal salt solution, after which the cavity is packed with gauze, which should be continued for a time depending upon the case in hand The irrigation must be continued until the opening is closed.

I do not employ plugs or tubes in openings after making an operation, as the cheek falls over the opening and prevents foreign mtaerial from entering the cavity.

The bismuth paste suggested by Rudolph Beck has the distinct advantage of completely filling the cavity with a semi-solid paste guarding against septic invasion from the mouth, and at the same time holds the stimulating drug in contact with the entire lining membrane of the cavity. Some care must be exercised in making the injection so as to have the entire cavity completely filled with the paste. In some cases more than one injection is necessary. The writer has used this paste a number of times with good results and believes it is particularly valuable in tubercular cases, besides doing away with the irrigating and lessening the number of treatments. A hard paraffin covering over the opening will prevent the escape of the paste during the process of mastication.

TIN CROWNS AND INLAYS.

BY W. F. KELSEY, D. D. S., MARSEILLES.

Though once quite generally employed in filling teeth, the use of tin for this purpose has of late years fallen into disrepute, owing partly to its inherent imperfections, but greatly to the difficulty of manipulation. The recent inventions which make it possible to reproduce the model of a cavity with its minutest details in gold or other metal has opened a new field for metallic fillings and done much to restrict the use of plastics, whose popularity is in great part due to the facility with which they can be inserted.

In presenting to the American Dental Society of Europe, the results of my experiments in the use of pure tin for crowns and inlays, I am fully prepared to receive a storm of criticism from those who maintain that the employment of a baser metal necessarily implies the lowering of the standard of workmanship.

The use of tin in no wise suggests the abandonment of gold, porcelain, amalgam or other plastic materials, but no one of these various substances has ever been found to combine all the requirements of a filling adaptable to all cases; their diversity alone sufficiently attests the fact. It will be objected that tin is rarely pure, that it has an unpleasant odor and taste, that its hardness is not sufficiently great for a durable filling, that it discolors the teeth, etc., but in its favor it can be said that its color is less objectionable than that of gold, it is more easily worked, it contracts but slightly in cooling, it tarnishes to no great extent, its ductility permits its more perfect adaptation to the walls of he cavity and its low fusing point, 451 degrees, almost entirely obviates the danger of discoloration or breaking, when used in connection with artificial teeth. Further, pure tin forms no oxid or other combination with substances that can in any way be detrimental to the teeth or general health, a statement that cannot always be made with regard to some of the materials currently employed. My experience leads me to think that it can be advantageously utilized in many cases where one is embarrassed in the choice of a material, more particularly in large proximal or buccal cavities in molars and biscuspids.

In making inlays the same rules should be followed as when

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*Read before the American Dental Society of Europe, Dresden, 1911.

gold is employed. If desired, pivot teeth can be cast without either backing the tooth or covering the root with a plate, although the pivot must be of some other metal than gold, as molten tin acts like mercury upon the precious metal. For crowns or pivot teeth, the bands should be made of either platinum or silver. Then model the cusps in wax. White's moulds are very convenient for this purpose. In making crowns, once the wax cap is carefully adapted, cover the exterior of the band with a thin coating of wax, cast and finish. If the band is free from oxidation the tin will flow over it and leave no visible trace of its presence.

Among the specimens I present to the Society, is one of five inlays cast simultaneously. This system was described in the *Cosmos* of May last and consequently requires no further explanation. The bridge representing a second molar, held by a crown upon the first and third molars is presented rather as a specimen of casting than as a sample of the highest type of dental art. If not of interest to the profession in general, it may contain a valuable suggestion to dental colleges and students, as the same manipulative skill is required in its construction as when the more noble metal is employed.

In conclusion, allow me to say, that although tin will probably never entirely supplant any of the existing filling materials, it yet may be found to possess qualities that will maintain its reputation as a useful adjunct to the already numerous substances employed for the preservation of the dental organs.

EXPERIENCES OF A DENTIST IN THE STUDY OF COMPARATIVE ANATOMY.*

BY PROFESSOR W. BEBB, LOS ANGELES, CAL.

I think you will admit that the experiences of a man in the study of anatomy admit of a wide range. I can refer to the science of anatomy or describe the specimens I have collected. but inasmuch as you have had already all the scientific thought you can easily digest this morning I intend to put upon the screen some slides which will be more in the nature of an entertainment than of a scientific paper, and I shall wander over a wide range of subjects.

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*Read before the American Dental Society of Europe, Dresden, 1911.

I come before your this morning largely for a selfish reason. I want to ask you why the subject of comparative dental anatomy is not taught in our dental schools. So far as I know there are not more than two or three schools in the United States that have a course in comparative dental anatomy, and in some of those schools the subject is taught not by a dentist, but by a comparative anatomist. We are teaching chemistry, histology, biology, anatomy, and what not, but we are not teaching dental anatomy. How few students when they graduate from school know anything about their teeth. We are supposed to know all about them because we are dentists—but I will cite a case. A man murders his wife and uses chemicals in the vat to destroy the body, so that nothing remains but one of the sessamoid bones and one tooth. That is a case which has more or less occurred in fact and it is not wholly theory on my part. The guilt or innocence of that man depends upon the identification of these few remaining exhibits. But they would not call in a dentist to identify the sessamoid bone, although we have studied anatomy. They would call in a physician. They would not call in a dentist to examine the residue of the vat. They would require a chemist to give expert evidence. But when it came to the identification of a tooth, they would call on a dentist. They might call on Mr. Smith, and Mr. Smith would swell up and expend his last month's salary for a new suit of clothes, and he would say, "I am going to show Mr. Jones and the rest of them that I know something about anatomy." Some shrewd attorney, however, would get him on the witness-stand. This may occur to any one of you who may be called upon to give expert evidence. The very first question that attorney might ask might be, "Will you define a tooth?" How many graduates of our schools can define a tooth? How many of you can define a tooth? If you want a find out something about the real knowledge of the men before you, start a question on the definition of a tooth, and do not call upon me, because I do not know more about it than the rest of them. The next question this attorney might ask you would be, "How many teeth does a dog possess?" Well, how many graduates of our schools can tell how many teeth a dog does possess? I defy any graduate of our schools to tell how many teeth a cat has. The attorney might then ask for a description of the difference between the teeth of a cat and the teeth of a dog, and this expert witness, who was getting fifty dollars a day for his time, might be obliged to admit that he could not tell the difference. The next question would be, "Now please, Mr. Witness, will you define to the Court the difference between a cat's tooth and a man's tooth?" How many of our graduates of today can tell that difference? The witness would say, "I cannot do it, but I know this is a man's tooth." "But," says the attorney, "That is not the point. I want you to define the difference." You are sitting here before me, and you think you may be more intelligent than our American audiences, but I doubt if 5 per cent of the men sitting before me can answer that question. I know that not 5 per cent of the graduates in the United States could do so. Therefore you see that the testimony before that Court would go for naught. For that one reason amongst others I say that we should study comparative dental anatomy in our schools; we should know something about the teeth of animals. A large percentage of our knowledge of the anatomy, physiology, and histology of the human race has come through the study of the lower animals. Some argue that these things should be taught in the secondary schools, but they are not taught there. I draw your attention to the fact that not only dentists do not know the anatomy of the teeth, but artists are ignorant on the same subject. My wife is always laughing at me because I am continually looking at the teeth portrayed in the various sculptures and pictures I have seen throughout the world, throughout the wonderful galleries of Europe. Even your greatest artist does not know anything about the teeth of animals, and very little about the teeth of men. I have before me a sketch of the lion of Lucerne, and I am going to pass it around. You will see that the sculptor has made two of the upper canines and has made the lower canine biting into a space distal to the upper canine. He has made the row of the lower incisors like the incisors of the herbivora, instead of the incisors of carnivorous animals, who use their teeth in scraping flesh from bones. The subject in other particulars I think is very nearly correct, because so far as I can see the anatomy of the muscles and of the rest of the structure is correct. Now here was a man who was a student of animals, a student of nature, a man who has made masterpieces, with as glaring defects, to me at least, as though he had made the animal with two tails. You may criticise my interest in art, but you cannot prove to me that that is not a defect.

There was one gentleman here yesterday with whom I should like to shake hands, because he is on the right track. He made a statement that we do not know enough about these ductless glands. I think we dentists, especially the orthodontists, are working from effect to cause rather than from cause to effect; we are working the wrong way round. We have to learn more about the effect of these ductless glands before we can understand the conditions which are present in the mouth or the causes that produce the conditions present in the mouth. Some specimens which I will show upon the screen I think will illustrate this point, that we must go behind the mouth to find the pathological conditions with which we are dealing. Many of us do not go back; we start with the mouth and we rest there. The orthodontist says that malocclusion of the teeth produces the high vault of the mouth, distorts the vertebrae and the ribs and the sternum. Undoubtedly the same condition which produces the distortion of the sternum and the ribs and the vertebrae produces the malocclusion of the mouth. You will find at the exhibition here in Dresden an exhibit from Dr. Baker of Boston, practically the only exhibit which has come from America. To my mind it has no scientific value. The paper was published in connection with experiments upon two rabbits, with one control, and the variations shown and the conclusions drawn are not greater than I can show on specimens of rabbits which I have collected in their native habitat, and I have over 50 sepcimens in my possession. Had Dr. Baker chosen to go into the subject scientifically he might have gone to the Washington Museum and seen 27,000 rabbits' skulls, and there discovered that the things he has portrayed exist in nature. I hesitate to criticise Dr. Bogue, as I never met him until yesterday, but I have criticised some of his writings in some of my articles, and when I met him yesterday I told him I was glad to meet him, and he said, "I am glad to meet you, but we do not seem to agree." I thought he said it in a manner to indicate that I had been unkind, but I hope Dr. Bogue will believe I had no intention of being unkind. I take off my hat to that grand old man, and I honour any man who follows his convictions whether they are right or wrong.

In caries of the teeth we are preaching the doctrine that clean teeth do not decay. But we know we are lying, because we are perfectly aware that in certain instances clean teeth do decay. I want to show you amongst some of these animals decayed teeth, teeth that were clean, but the animals were captive animals. The fact that they were in captivity interfered with the nutrition of their food, and with all the functions of the body, and the decay was a consequence; it was not because the teeth were unclean. Again, in this matter of the irregularity of the teeth, especially the irregularity of the teeth of children. The orthodontist says that evolution and heredity are almost a joke when considered in connection with the question of irregularity of the teeth. Why the permanent teeth are more irregular than the deciduous teeth I believe can be explained in this way. All organisms are subject to variation, and some to greater variation than others. Certain animals are subject to greater variation than are other animals. We find the domestic goose, for instance, breeding today just as true as it bred many thousands of years ago. There has not been a change in a feather of that bird from the time we first knew it down to today. On the other hand, the domestic hen has been bred from one wild jungle fowl, and yet look at the infinite variety of offspring of that one wild fowl! Why? Simply because variations have taken place, and man has taken advantage of those variations. I believe—and this is the theory which the orthodontist of course upholds—that a variation which causes irregularity of the teeth is due to the fact that one organism does vary more than another, and that the variations in the teeth which are derived from one layer is greater than the variation which takes place in another layer, and that the bony support has varied to a greater degree than has the support of the teeth; and that the reason why the permanent teeth seem to be more irregular than the deciduous teeth is because variations do not become apparent until adult life. No one doubts that the deciduous teeth are irregular, but they do not show that irregularity, and irregularities are not shown until adult life. Take a brood of white leghorn chickens. When first hatched they are all white and all of the same size, beaks, tails, feathers; but let those chickens grow a little and here and there will appear a dark feather and here and there will appear a difference in the size, and when they grow to full adult life the sex, which is obscure, will be clearly differentiated. The same thing applies to a child. When the baby is first born I defy you to say whether it is a dear little girl or a dear little boy. You have to say, "It is a dear little thing," if you do not want to get into trouble. They all look alike to men, although they do not to the mothers. They are all beautiful and the variations which are apparent in later life have not yet appeared. For that reason I argue that the permanent teeth seem to be more irregular than the deciduous teeth.

I want to enlarge upon the excellent paper of your president yesterday, in which he asked you to take exercise, and I am going to show you some pictures of the results of some of my collecting trips, which have been my means of exercise.

[Professor Bebb then exhibited a series of lantern slides, illustrating places in California, the scenes of his collecting expeditions, and remarked that he showed them to prove that the study of comparative anatomy was not all grind from textbooks. The mere collection of the specimens, he maintained, afforded a greater recreation than any other that could be engaged in. To go out into the mountains and follow along with the gun and dog was not to his liking; he preferred to be doing something which was not alone recreation, but which was adding something to knowledge that would be of benefit to the profession. He also exhibited a large number of slides illustrating the dental anatomy of animals, and in the course of his remarks upon the slides he said:]

The disease which interferes with the normal amount of lime salts deposits in the bones is first reflected in the alveolar process and the alveolar process suffers most. In human beings rickets or any other disease may interfere with the deposits of lime salts and for that reason there would be consequent malocclusion. It would be folly to attempt to correct that malocclusion until you have corrected the systemic condition producing the malocclusion. Osteoporitis is so common amongst captive monkeys that I have rarely found one perfect, and at the Natural History Museum in Berlin they told me the same thing. Do we know how many of our children suffer from osteoporitis? You will meet with rickets in a wealthy practice just as much as in a poor practice; it is not a disease of poverty but of malnutrition and lack of oxygenation of the blood, lack of sunshine and so forth. I could show you many specimens of the New World monkeys in the which the teeth are out of alignment, the animals suffering from osteoporitis, but I think I have shown you sufficient to make it clear that captive animals do suffer from systemic diseases, and I think from adenoids.

Of all the specimnes I obtained in their native element I did not find a single one showing evidence of any disease other than that due to traumatism. The late Dr. Barrett had a skull of a gorilla with caries of the teeth, and he said the specimen was taken in its native habitat, but I am inclined to think it had been in captivity at one time because he obtained it from a commercial speculator. Amongst captive animals I have found that those animals which live upon exclusive foods, the cat tribe, with long cutting molars for simply slicing the food, are the greatest sufferers from dental disease, and at the other extreme the exclusive plant feeders suffer most from diseases of the teeth. What is true of captive animals is also true of domestic animals. The character of the food does not have such a great influence upon caries of the teeth as does the faulty nutrition of the body. I think you will readily comprehend that a captive cat can be supplied with the food upon which it lives in its native habitat much more easily than one of the mixed feeders, a monkey or a racoon. An animal accustomed to living upon bird's eggs, young birds, fruit, grubs, tender shoots of bamboo, etc., has teeth very similar to the human. In the bear some of the molars are not unlike the teeth of human beings. Yet I have not found a single case of caries among captive bears. So common is dental disease among the cat tribe and amongst herbivora that I do not expect to find a perfect specimen of tooth in the mouth of any animal that has been in captivity for any length of time. I think that is an argument in favour of banishing the cat to the backyard. The dog rarely suffers from dental disease, while the cat is rarely free from it.

As another illustration of the ignorance of dental anatomy I may mention that in Switzerland they do not carve the teeth of the bears rightly. They carve them with two incisors up to eight; they carve them with the lower canine biting distally to the upper, and they carve them with their mouths open and a pleasant expression. If you examine a bear when his mouth is widely distended, you will see that the distension of the mouth draws into tension the nose, and wrinkles the muscles, and gives the animal an appearance quite different from that given to him by the Swiss carvers.

There is also a relation of some sort between the decay of the teeth and the amount of hair an animal possesses. The Angora cats are prone to disease of the teeth.

SOME RECENT INVESTIGATIONS UPON THE HISTOLOGY OF THE DENTIN.

BY C. F. BÖDECKER, D. D. S., BERLIN.

Being the report of the Microscopist of the American Dental Society ot Europe.

The dentin of the human teeth is a tissue which has been examined by many histologists, and many have been the controversies concerning its minute structure. Ten years ago these were thought to have been definitely settled, but Römer[1] published in 1909 a large, splendid atlas on "The Dental Pulp and the Normal Anatomy of the Dentine," in which he again takes up the old theory that the dentin is permeated by minute canals which contain, not fibres, but a fluid.

In glancing over the history of the researches on dentin, we find that in 1852 Kölliker succeeded in isolating tubules, by treating the dentin with concentrated acids or alkalies. He believed that these contained fluid, and represented prolongations of the odontoblasts. In the year 1856 Tomes isolated solid fibres from the dentin which he claimed were the true prolongations of the odontoblasts. Kölliker then identified his tubules with the solid fibres of Tomes and these have since then been called "Tomes fibres." Neumann in 1863, in describing the dentin, claimed that the dentinal tubuli were lined; this lining has since been called the "sheath of Neumann."

The general and most accepted view at present of the structure of the dentin is, that it is made up of a basis substance containing a great number of canals radiating from the surface of the pulp to the dentino-enamel margin. Each canal is lined with the sheath of Neumann, a tissue similar to the basis substance of the dentin, but considerably more resistant to the action of acids and alkalies. In the center of these sheaths, lies the "soft fibre of Tomes." This is seen in cross section in figure I, which is a reproduction of a drawing by Fleischmann.

The basis substance lying between the dentinal canaliculi is permeated by a fine reticular network which is made up of offshoots from the canaliculi. (Fig. 2) is a longitudinal section also

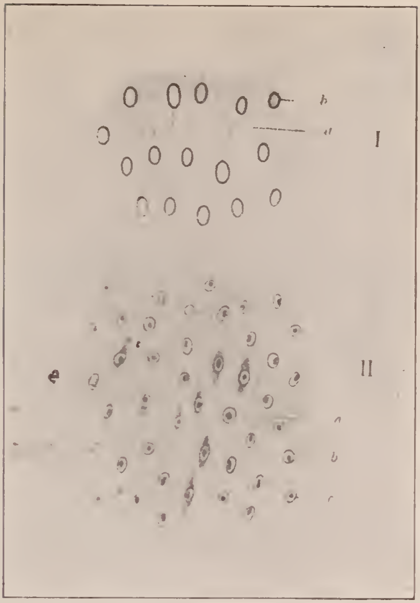

Fig. 1 (Fleischmann).
Cross Section of Dentin. a—Basis substance of dentin; b—Sheath of Newmann; c—Tomes fibre; d—Empty sheath from which Tomes fibre has dropped out; e—Space between fibre and sheath. Magnification, 1000x.

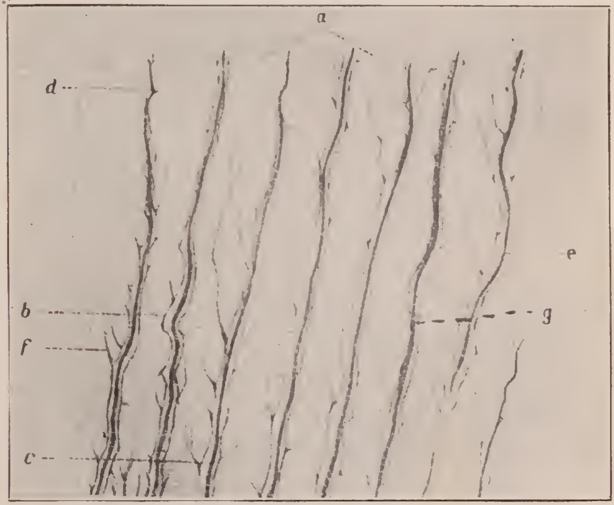

Fig. 2 (Fleischmann).
Longitudinal Section of Dentin. a—Basis substance; b—Sheath; c—Fibre; e—Space between fibre and sheath. Magnification, 1000x.

drawn by Fleischmann, in which the fibres, sheaths, and delicate offshoots are shown.

Figure 3, showing the reticular net-work of the dentin, is a reproduction of a drawing from the "Anatomy and Pathology of the Teeth" by C. F. W. Bödecker.[2] When my father first published this discovery in 1878, the results of his investigations were not accepted, and they are not, to my knowledge, recognized in America up to this day. In Europe he was corroborated in 1899 by Witzel, who found that teeth previously filled with amalgam, showed this delicate net-work in the dentin. But Witzel is not the only one who has accepted Bödecker's views, for every European work on histology now shows this delicate net work.

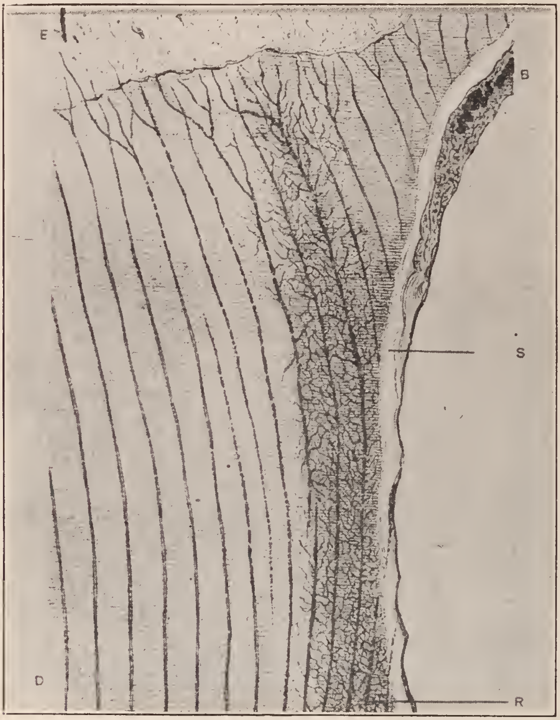

Fig. 3 (C. F. W. Bödeker).
Ground Bicuspid; Cavity of Crown Previously Filled with Amalgam. E—Enamel; D—Dentin; B—Border of cavity; S—Solidified dentin; R—Reticulum of dentin. Magnification 500x.

This drawing (Fig. 4), a longitudinal section, shows the Tomes fibres projecting from the dentin, some of the basis substance having been removed. The Tomes fibres are the object of the present controversy. They have been regarded as solid fibres ever since John Tomes described them. Römer now claims that they are not solid fibres, but tubes. He claims that these tubes, filled with a semifluid, arise from the odontoblasts and pass through the dentin in channels, whose walls consist of a tissue, similar to the basis substance. This is more easily explained in cross section.

Owing to the number of scientific investigators who have worked, each with different results, upon the dentin, great confusion has arisen in the nomenclature. Different names have been given to the same structure, and different structures have been called by the same name. I, therefore, made this diagramatic drawing, (Fig. 5.) in order to avoid misconception.

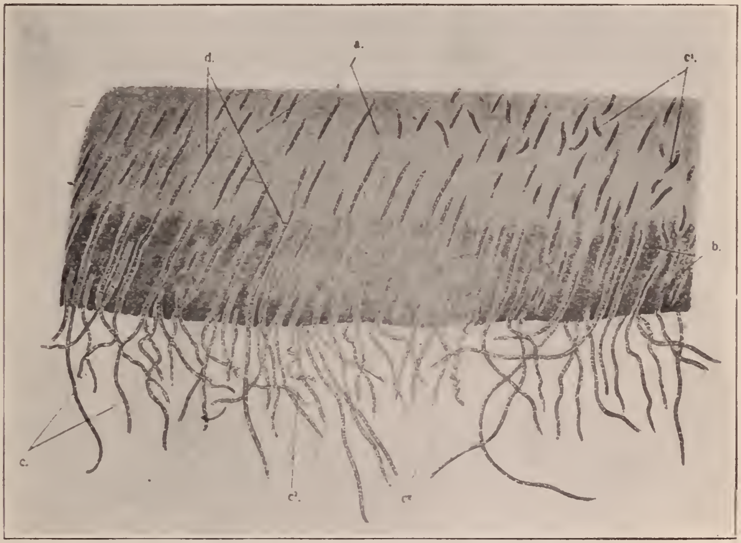

Fig. 4.
Ground Section of Dentin with Protruding Tomes Fibres c.
Magnification 600x.

At A, it illustrates the accepted theory of the minute anatomy of Tomes fibre and the surrounding structures, as seen in decalcified stained sections. The dark disc in the center, is Tomes fibre, and around it a space, said to be caused by the contraction of the fibre. Surrounding the space, the sheath of Neumann is visible, due to staining the specimen. At B, we see a diagram of the same structures, in a ground section of dentin, that is, in a section that has not been decalcified. Tomes Fibre has the same appearance. The sheath of Neumann is not visible, as it cannot be demonstrated in undecalcified specimens. C. shows Tomes fibre, as it is assumed to appear in living dentin. It is supposed to fill out the entire space. D depicts Römer's view, which we see is quite different from the foregoing. The dark circle, in the center, is Römer's dentinal canal which has the same diameter as Tomes fibre, seen at A. He does not believe that it undergoes any shrinkage; he claims that the dentinal canal is never surrounded by a space, but by a tissue similar to the basis substance of the dentin, yet of different chemical reaction. This zone Römer calls the dentinal sheath, but he emphasizes the fact that this sheath is not the same as the sheath of Neumann. It is very difficult to stain this area, and therefore it has been regarded as a space caused by the shrinkage of the dentinal fibre. In Römer's microphotographs, which now follow, this area has the appearance as though it really were a tissue as he claims it to be.

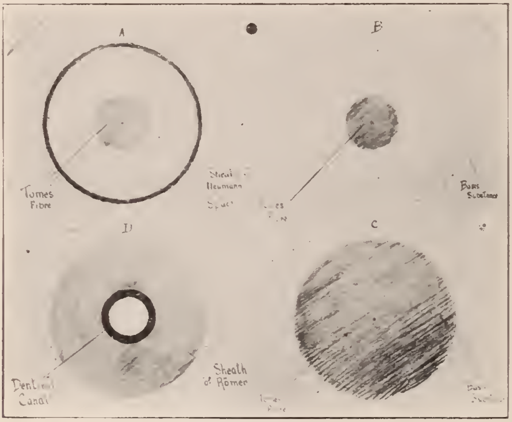

Fig. 5.
Diagram showing at A the accepted theory of the relation of Tomes fibre, etc., to the basic substance in a stained decalcified section. B—Same, only in ground (now decalcified) section, sheath of Newmann not visible; C—Same, as it is assumed to be in a living tooth; D—Römer's view.

This figure (6) is a microphotograph of a ground specimen of dentin, showing the structures in cross section. Here we see central

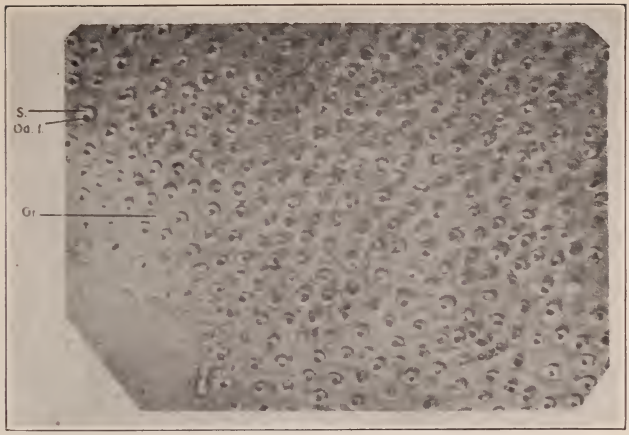

Fig. 6 (Römer).
Ground section of dentin showing Od. f. odontoblastic fibre and S sheath in cross section. Gr.—Basis substance. Magnification about 450x.

dark dots which, according to Römer, are dentinal canals, surrounded by a ring-like structure—Römer's sheath. Other authors claimed these ring-like structures to be an optical delusion due to refraction caused by the difference in calcification of the basis substance, around the leumen of the dentinal canaliculi. The sheath of Neumann is not visible in calcified specimens; it can only be demonstrated by decalcifying and staining sections of dentin. If acid is added to a ground section of dentin, the ring-like structures or sheaths of Römer disappear, as will be seen in this figure (Fig. 7).

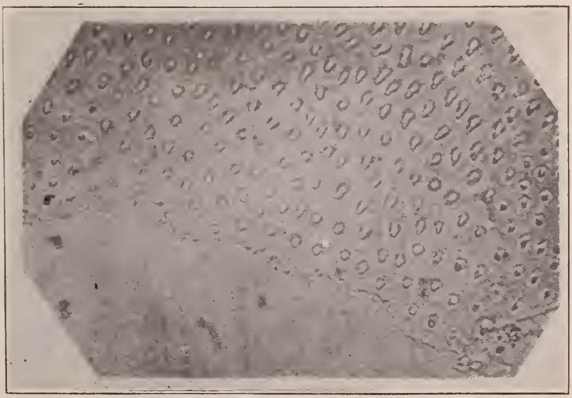

Fig. 7 (Römer).
Same as Fig. 6 after adding dilute hydrochloric acid. The ring-like structures or Römer's sheaths, seem to be attacked first. Magnification about 450x.

This figure (Fig. 8) is a microphotograph of a section of decalcified dentin stained with alumn haematoxylin. In it circular light spaces appear in the dark mass of the basis substance. In the center

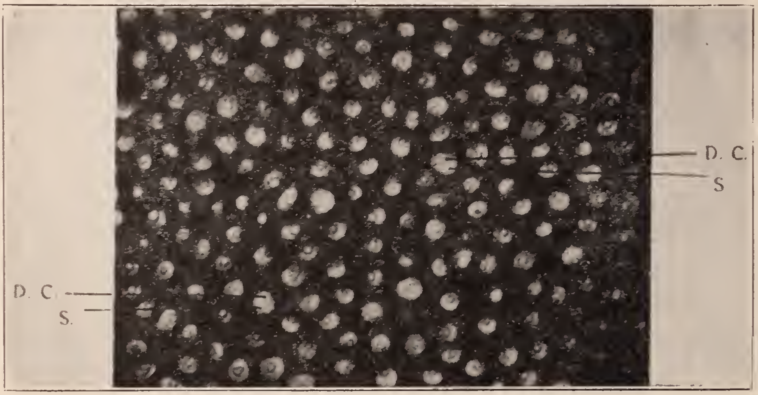

Fig. 8 (Römer).
Decalcified, Cross Section of Dentin. D. C.—Dentinal canals; S—Sheaths.
Magnification 700x.

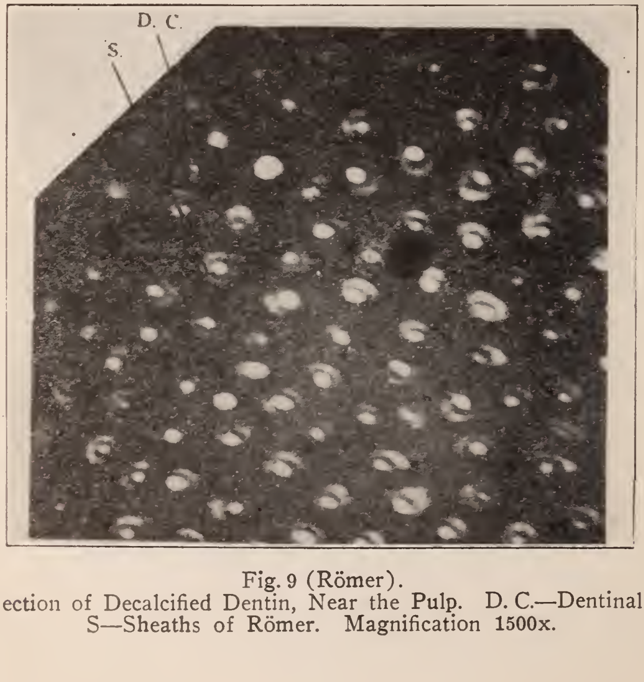

Fig. 9 (Römer).
Cross Section of Decalcified Dentin, Near the Pulp. D. C.—Dentinal canals; S—Sheaths of Römer. Magnification 1500x.

of most of these light areas we see a tube in cross section, Römer's dentinal canal, a direct prolongation of the odontoblast.

A high enlargement of the same specimen is seen in this figure (Fig. 9). The dentinal canals of Römer are clearly seen in cross section, surrounded by a slightly darker area, the sheaths.

The final proof that Römer brings forward, that his dentinal canals and the dentinal fibers of other authors are the same, depends upon measurement. He shows that both these structures have a diameter of one micromillimeter. He also establishes, in the same manner, the identity of the ring-like structures, surrounding the dentinal fibers in undecalcified, ground sections, with the light areas surrounding the dentinal canals in decalcified, cut sections. In each case they are about four micromillimeters in diameter. (See Fig. 10.)

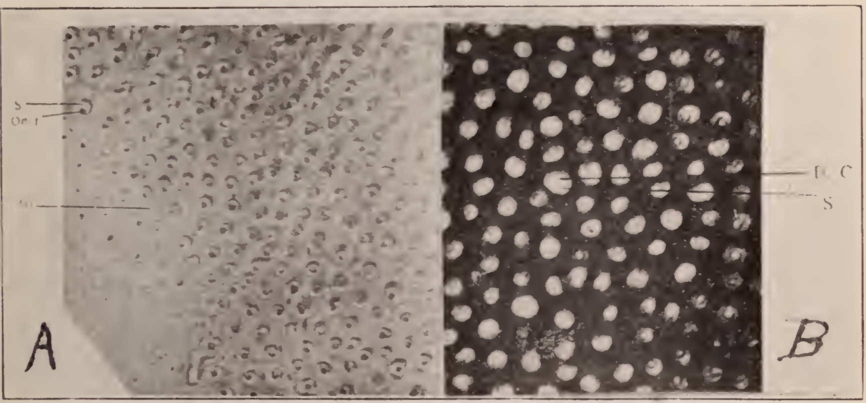

Fig. 10 (Römer).

A—Ground section of dentin; B—Decalcified section of dentin. The size of odontoblast fibre (Od. f.) in A is the same size as dentinal canal (D. C.) in B. The ring S in A is the same size as S in B, hence Römer concludes that they are one and the same. Magnification of A and B, 750x.

John Hart,[3] as a result of his researches in Karl Heitzmann's laboratory, describes in the *Dental Cosmos,* 1891, Tomes fiber as a fiber having at intervals, vacuoles. This is a drawing (Fig. 11) from the above mentioned author showing these structures in cross section; some fibers appear solid, others as circles, which Hart considered to be vacuoles.

The illustrations shown have been of healthy human dentin. The following are of the same tissue in the first stages of decay. This figure (Fig. 12) shows at D, C and S the dentinal canal and

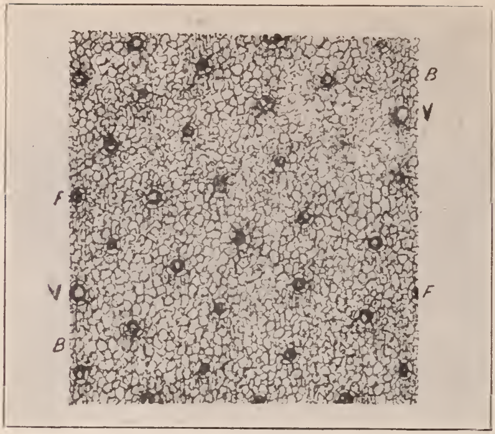

Fig. 11 (Hart).
Dentin of Temporary Tooth. F. F.—Dentinal fibres; B. B.—Basis substance traversed by a delicate reticulum, in connection with dentinal fibre. V. V.—Vacuoles. Magnification 1200x.

sheath in a healthy condition, while at D C^1 the dentinal canal is filled with bacteria, giving it the appearance of a solid fiber.

In slightly more advanced stages of decay the bacteria fill out

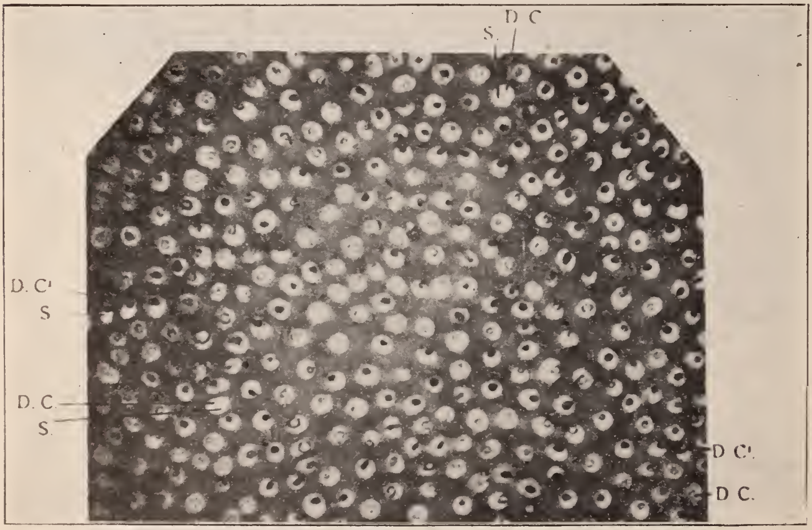

Fig. 12 (Römer).
Decalcified Section of Dentin in First Stages of Decay. D. C. and S—Healthy dentinal canals and sheaths; D. C.^{1}—Dentinal canals filled with bacteria. Magnification 730x.

the entire sheath of Römer. This sheath, as has already been said, is made up of the same tissue as the basis substance of the dentin, with the exception that it is not so highly calcified. For this reason, decay progresses more rapidly along the sheath than through the basis substance proper.

In this figure (Fig. 13) we see many of the sheaths completely filled with bacteria, and in some places the basis substance has decayed, causing a complete breaking down of the dentin.

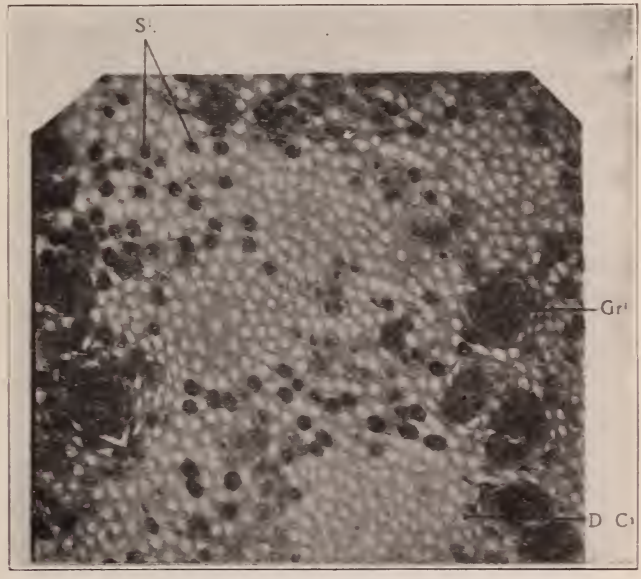

Fig. 13 (Römer).
Decalcified Section of Dentin in More Advanced Stages of Decay. D. C.¹—Dentinal canals filled with bacteria; S¹—Sheath filled with bacteria. Gr¹—Basis substance broken down. Magnification 375x.

A higher enlargement (Fig. 14) of a section of dentin, stained with the specific bacterial stain of Gram, shows the dentinal canals completely filled with bacteria. As this stain colors only the bacteria, simply the contents of the dentinal canals and sheaths are colored, leaving the basis substance light. The large diameter of the dentinal canals Römer accounts for by claiming that the bacteria have destroyed both canals and sheaths.

Here (Fig. 15) the dentinal canals are seen in longitudinal section. At some places only the dentinal canals have been invaded by the bacteria, while the wider dark lines show that both the canals and the sheaths have been destroyed.

After viewing the dentin under the high magnifications shown in some of the illustrations, and seeing the dentinal canals as large circles on the screen, it may be of interest to quote some of the figures of Römer's calculation concerning the number of dentinal canals found in a square millimeter of dentin. He states that there are, near the enamel margin, 14,700 canals, while in a square millimeter near the pulp chamber he found the immense number of 37,600. Assuming the superficial area of the walls of the pulp chamber of a molar to be about one square centimeter, the crown would then contain about 3,760,000 canals.

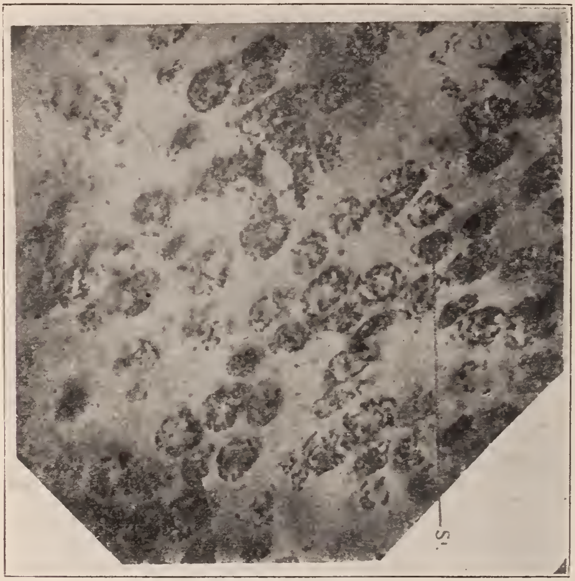

Fig. 14 (Römer).
Section of Carious Dentin Stained with Specific Bacterial Stain of Gram. Both sheaths and dentinal canals filled with bacteria. Magnification 1080x.

All the above statements have been made by Römer, and I must say that his claim that the dentinal canaliculi contain tubes instead of fibers seems quite reasonable, if one considers that tubes are of more use than fibers for the purpose of circulation. If we accept Römer's theory, the only possible explanation that this has remained unnoticed so long is that the dentinal canals contain a viscid fluid, rich in albuminous matter, which is easily coagulated by alcohol. This would readily explain why partially emptied canals show vacuoles, as drawn by Hart, and why other authors ascribe these spaces to a shrinkage of Tomes fiber. I have not as yet taken the opportunity to examine the dentin for the purpose of corroborating Römer's views.

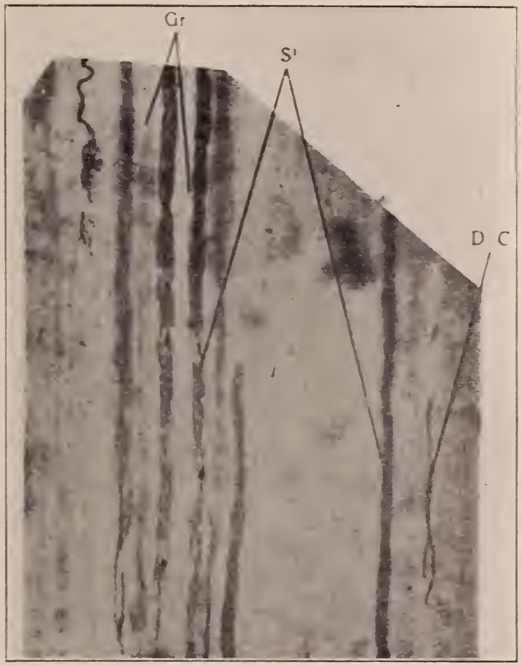

Fig. 15 (Römer).
Longitudinal Section of Carious Dentin, Stained with Gram's Bacterial Stain. At D. C. only the dentinal canal is infected, leaving sheath normal, while at S¹ both sheath and dentinal canal are filled with bacteria. Gr.—Basis substance. Magnification 750x.

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UNNECESSARY PAIN DURING AND AFTER DENTAL OPERATIONS.*

BY W. E. TENNANT, D. D. S., FOND DU LAC, WIS.

In the study of the question at close range as to "Why do not a greater percentage of the public seek dental service?" we are confronted with several seemingly good reasons, prominent among which might be mentioned undervaluing the importance of the dental organs, lack of self pride, financial, and we might mention perhaps many others, but the one chief reason—the one that towers head and shoulders above all the rest, in fact I firmly believe equals the sum total of all the rest—is fear, dread of pain.

We may attribute some of this neglect to properly care for the oral cavity to lack of proper teaching, but should we not place some of the fault at the door of improper teaching, for surely we must admit that the dental chair recalls to many persons experiences that are not complimentary to us as a profession, an experience of some past torture as they term it (and rightly so in many cases), a remembrance of a racked nervous system and an exhausted physical condition that, like Banquo's ghost, "will not down."

Since dental operations have been performed the word dentist has been practically, though unfortunately, synonymous with pain. This bug-bear has kept millions of people away from dental treatment—even many that need it badly and keenly desire our services—and financial and the many other reasons are not considered in the least. Some of these patients would be willing to pay almost any fee named, providing we could render the service without the pain.

Painless Parker, his whole clan and kind, get a goodly share of their patronage, not because the people that patronize them expect to get something for nothing, but rather because that word "painless" appeals to them. It acts as a sedative to their over-wrought nerves; a tonic to the conscience, and a stimulant to a lagging ambition; it crowds into oblivion the picture of the dentist operating with the gleeful and malicious grin, and in its stead paints one full of sympathy, with a nature that lulls to rest those that are fortunate enough to sit in his chair.

Oftentimes we hear such exclamations as "I'd about as soon take Daniel's place in the lion's den as sit in your chair," and "I've postponed this thing until I just can't postpone it longer," and if this case happens to be a long deferred one you are all quite familiar with the picture this mouth presents—its unhygienic condition, including perhaps inflammations, accumulated debris, and putrescent pulps and pyorrhea not uncommon.

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*Read before the Fond du Lac Dental Society, December 7, 1911.

Modern living is a tax upon our vital energies; each generation is notably weaker than the last. The rush of business, the chase after the dollar, the demands of society, the predigested foods, the midnight supper, insufficient sleep and exercise in open air, all tend to make man a flighty, "tuned-to-the-minute," nerve taut individual, less able to withstand hardships than did our forefathers or even the rugged constitution of our parents.

It is useless to preach and moralize, offer suggestions and remedies—it's simply "up to us" to meet the conditions as they are.

Gentlemen, if one of us could this night discover a compound or invent a "placebo" for the pain and discomfort of the dental chair, if he could box or bottle it up and retail it out to his fellow practitioners, he would find the world clamoring at his feet or the morrow to pay him homage. There would be plenty customers for this remedy, whether it be $1.00 or $50.00 an ounce, and his name would be carved prominently among our most illustrious ones.

Think of the nervous energy that could be saved even within the four walls of one office, not only to the patients of that office, but to one whom the Creator knows needs the conserving of his energies—the dentist.

Think of the impoverished individuals, their conditions brought about largely by sheer neglect of the oral cavity, with all the train of symptoms; indigestions, anemias, inflammations and dozens of other ills that proper dental attention would relieve, if not cure; think how we could benefit humanity, if only given this great remedy. Would not the dentist be more respected and more appreciated than he is today?

Some may say, "It takes too much time," "patients won't pay for the extra trouble," etc. To that man let me say, every heart has some of the finer sensibilities and nearly all can easily detect these qualities in another; they will appreciate kindness and will not regret a reasonable fee for extra time or trouble taken in their behalf.

Rough and barbarous treatment was at one time taken as a matter of course—necessary for so-called "good work"—but today the public justly feels that good service can be rendered and be mixed as well with a goodly measure of the milk of human kindness.

Could we sit in our chairs and have administered some of the heroic doses we daily administer, our life blood, I predict, would be charged with more humanitarian impulses.

Now, just a few of the many methods that cause unnecessary pain. A child or a nervous person that has passed a wakeful night is in no physical condition to have an exposed pulp punctured several times, an elongated tooth tapped more than is necessary, roots extracted without a proper anesthetic or even a treatment sealed within a tooth without kindness and care being used in the operation.

Keeping a patient several hours under a severe nervous strain should be tabooed; one-half hour in severe cases should be the maximum; patients have undergone nervous strain and fatigue by protracted dental operations, from which it has taken them weeks to recover, and the memory of such an experience will never be forgotten.

A pulp can be killed without pain if you will only take the time. There is no excuse for sealing arsenic upon a pulp that is inflamed or has been aching severely, causing pressure in the sealing, or failure to use cocaine with the arsenical preparation; the pain and inflammation should be relieved first and the pulp should be left within the tooth until thoroughly devitalized, before attempting to remove it.

An essential oil sealed within the pulp chamber after the arsenic has been removed (and many times the arsenic is not left half long enough) for from one to two weeks will enable one to remove the pulp painlessly; you will have no hemorrhage and the canals will be in ideal condition to fill.

If just this one thing could be accomplished: removing pulps painlessly, dentistry would lose one of its greatest horrors, and thereby gain millions of new patients.

That we have dentists that will extract teeth that can be easily saved, is indeed unfortunate, but that we have men that will extract without anesthetics, that will cut, carve and lacerate the tissues, and mutilate the masticatory apparatus with impunity, causing untold suffering, is surely to be deplored.

Difficult cases of extractions (impactors, etc.,) should require especial care, and I would add by way of parenthesis, they should require fees in proportion to the demands of the case.

Attempting to remove an irritable pulp, or one that is inflamed, with cocaine, is usually a very unsatisfactory procedure and one that causes much unnecessary pain.

Crowding infectious material through into the apical space, causing acute pericentitis (in nine cases out of ten), is surely a very lax and careless method.

A filling without a well formed contact point with the approximating tooth, or a large flat contact of filling material, filling the entire interproximal space and extending into and crowding upon the gum tissue, is a constant annoyance, and cause patients to avoid future service, fearing it might result in like troubles.

By the use of the matrix, contouring instruments and a little time all this trouble is avoided.

A large metal filling placed literally upon the pulp (no lining at all of cement) is a constant reminder that due care was not taken in the operation and if the pulp does not die from constant irritation it will have to be removed before comfort will come to that tooth.

The use of the silk ligature, as a retainer of the dam, crowding it far up under the free margin of the gum so that it infringes upon the gingivas, has caused many, many hours of agony—also caused many cases of gingivitis and pyorrhea.

Using infected broaches, making a veritable hornet's nest out of an otherwise easy case, is a thing altogether too common.

In the average dental office sterilization is not thorough enough; to wipe, or even scrub with soap and water does not sterilize—not by any means—but a little wiping off is all that many instruments receive.

When you think of the many cases of syphilis right here in our little city, and in fact in every city, tuberculosis, diphtheria (the germs of which pathologists tell us will live in the throat for three months), pus germs, some of the most pathogenic that are met with, contaminating our instruments, and those instruments are merely wiped off—well, gentlemen, we are not doing our share to stop infectious diseases, to say nothing about spreading disease.

Dr. Wm. Hunter of Charring Cross Hospital, London, has an article in the August number of *Current Literature* under the caption: "An English physician's denunciation of America Dentistry," and in a long article that is no credit to dentistry, says among other things, "Dentistry as practiced in this country is a curse to the world —the fruitful sources of one of the most terrible scourges affecting the physical frame of man—sepsis." While this statement is false, yet, infections are carried by dental instruments many times, and far more than they should be; and we have pain from an infection, always.

A tooth with a dead pulp—one that has been dormant for years by a little careless treatment is made to keep the patient from eating or even sleeping for days—some times so discouraging this condition becomes that the patient insists upon the removal of the tooth.

Now an experience of this kind will undoubtedly postpone indefinitely or cause to be given up entirely the next case that looks at all doubtful as to the results of its treatment; and a recital of this experience to friends or neighbors will do more harm to honest and careful dentists, and will do more to keep away patients from necessary work than all the members of this society have been able to gain through careful dental education during the past year.

Dr. F. B. Moorehead, a prominent oral surgeon of Chicago, says: "Fifty per cent of the lesions of the mouth that oral surgeons are called upon to treat have their etiology in mismanaged root canals."

Many children's teeth are mismanaged or neglected because children, as a rule, are trying to work for—but if we would leave a good lesson with humanity, begin today with the child—for he is the man of tomorrow—treat him as you would your own child and you will not extract his teeth before the proper time; you will treat his pains and abscesses, cure them, and give that little jaw a chance to develop, and give him a chance for better morals, a better mentality and better health (to say nothing about a better face) for it has been demonstrated in the city of Cleveland—when a school of that city was tested as to the efficiency of proper dental service for its pupils, that it actually bettered them morally, physically and mentally.

When we know that a high per cent of the irregularities are caused by premature extraction of the decidous teeth, why is it that dentists will willfully distort that child's features for life?

Dr. W. A. Evans, ex-Health Commissioner of Chicago, is authority for the statement that well authenticated cases of contagious diseases have been traced to neglected cavities in children's teeth and further states that 97 per cent of the school children of Chicago need dental attention. What is true of Chicago is pretty much true of our city and while we do not see all of these cases, we can at least be honest with the ones we do see.

With the wave of interest in oral hygiene sweeping over the land in all directions, if we but use our best judgment on every case, use care and kindliness at all times, how easily it would be to enlarge our field materially, and accomplish a work immensely worth while, in that humanity would be better served both in numbers and in the grade of service.

Dr. Rhein has reminded us that we occupy a unique position; in so far that we first introduced anesthesia, and today find ourselves subject to the criticism of the medical world because our work is so much dreaded and feared by our patients.

A noted dentist, now grown gray, in an hour of retrospect, said: "Could I practice my profession again, I would cause less pain and more pleasure by using anesthetics twenty times where I have used them but once."

Dr. Wm. H. DeFord's new book on "General Anesthesia in Dentistry" is full of helpful suggestions for the average dentist. He well says: "Bold in other directions, commendably progressive in all that relates to manipulative ability and artistic development, the dental surgeon shrinks from anesthetics. He cuts living tissue, lacerating the nerves themselves, 'performing laparotomies upon the teeth,' so to speak, and the anesthetic usually employed is that of a witty speech or an amusing story, while the patient suffers, cringes, agonizes almost to the state of collapse. In this enlightened age no surgeon, except a dental surgeon, permits a patient to undergo, without an anesthetic, tortures equal in severity and duration to which one submits during the average dental operation."

A dentin obtundent prepared by the Chemical Products Co. of Chicago (a mixture of Menthol, Cocain, Phenol and Eucalyptol) works well indeed, in the average case, and is one that can be recommended.

Also another remedy, that is not at all new, but will quickly relieve pain from a tooth socket, if used as a pack, is equal parts of Europhen and Orthoform made into a paste with Albolene.

Dr. Johnson in a recent article, in speaking about fleeting and flimsy glory with its transient power and its inevitable disappointments concludes with the following:

"Contrast this with the satisfaction, the lasting satisfaction, of knowing that you have contributed something of real service to the betterment of the race by a new idea for the alleviation of human suffering. After all there is only one thing worth striving for in this world. All else is as sounding brass and tinkling cymbal. We may make great wealth and quite as likely as not it will prove a curse rather than a blessing, we may attain to political power and in the end the fickleness of public sentiment will drag the support from under us and down we go in humiliation and defeat, we may fly high in the social realm only to have our wings singed by the scorching fires of envy and deceit, we may win renown in the world by some great achievement and listen to the music of the plaudits of the crowd, and yet there is in all this nothing of lasting satisfaction. The praise of the multitude palls after a while because we learn to know how evanescent it is. The only thing really worth while is the good we do to our fellow man, the good we do quietly and without ostentation. The sole commendation we need is the consciousness of our own heart that we have done a good thing. If we have this with us at all times we need seek no further stimulus for growth."

THE RELATION OF MOUTH CONDITIONS TO BODILY HEALTH—WHAT THE DENTAL PROFESSION NEEDS.

BY EDWARD H. BAKER, M. D., CHICAGO.

In the following paper, I have pointed out that the crying need of the dental profession today is the collection of scientific data regarding the relation of mouth conditions to bodily health; also the necessity of systematic, scientific research on a large scale, concerning mouth conditions, especially pyorrhea.

Nearly all dentists would agree that such research and collection of statistics is desirable, but I shall try to show that it is necessary.

Does the dentist know that he can greatly increase his present income? That he can elevate his professional standing far above its present level? That he can rival the doctor of the future in becoming the most important man in the community? That he can become the greatest of benefactors to the health and life of the human race?

On the other hand, does he realize that his income can easily sink to one-third of its present value? That his professional status may become less honorable? That the whole human race may unwittingly suffer from his failure to grasp his opportunity?

Does he realize how easily a new cult of tooth-polishers could invade his territory, steal some of his thunder, and eventually carry many dentists off as captives to toil on the limited salary of a paid mechanic, in the offices of the successful devotees of a new cult (taught by him), where shrewd advertising methods and business foresight would win many golden simoleons?

Will this new cult need a license?

Well, how did the Osteopath start? Did he have a license? Did the Christian Scientist have a license? Is the possibility of such a situation based only upon fancy? I think we all realize the growing importance of prophylaxis. Its real value is likely to be underestimated rather than overestimated.

As to whether such an event as mentioned above could come to pass, I do not know. I am not a prophet. I can only look at the past and see what has already occurred,—what is occurring today.

In a way, the present prosperity of the dental profession constitutes its greatest danger. To understand this, we have only to look at the lives of men all around us. While the struggle for the necessities of life may spur one to great endeavor, it is commonly noted that those who obtain these necessities without a prolonged struggle are apt to relax their efforts as soon as a competency is attained.

The rich man's son is apt to prefer not to work at all. If the hard struggle to obtain a foot-hold lasts only a few months or a year or so, the man is likely to be easily satisfied with his condition. Whereas, the man whose whole early life has been an unceasing struggle against the adversities of poverty or lowly birth, is apt, if he once gains a good foot-hold, to continue his industrious habits of thought and action up to the day of his death.

The dental profession offers a good living to its graduates from the moment they receive a diploma. Many a young dentist has found himself in receipt of an income of fifteen hundred to three thousand dollars per annum the first year after graduation, which quickly grew to double this amount. Can anyone blame him for feeling pleased with his lot? When he watched the uncertain business experiences of his boyhood companions in other pursuits, can anyone wonder that he felt contented with his own success?

Can we wonder that the constant, unremitting, tiring work at the chair by day, and in the laboratory at night or Sundays, left little energy for thoughts of collecting statistics or doing research work? Besides, it was not a necessity.

But it has become a necessity with the sister profession of medicine. This profession whose medical schools only a few years ago turned out even larger classes than the dental schools of today, has had and is having a lesson, by which the dental profession may profit.

The value of an article may be estimated in one of three ways:

1. What the seller thinks it is worth.
2. What the buyer thinks it is worth.
3. The intrinsic value of the article.

These factors which control all charges for services, may, in the case of dental fees, be paraphrased as follows:

1. The dentists' opinion of the value of his own services to the life and health of his patient.
2. Public opinion as to the value of dental services.
3. Known facts about the relation of mouth conditions to bodily health.

In these days of modern strenuous life, of fierce competition, of overcrowding of the professions, it is only the fit who survive. The laggard or careless, those who manage their business poorly or inefficiently, get left in the race. And this applies not only to money income, to accumulation of profits in the form of savings and investments, but to professional standing as well as to health and longevity.

Let me explain my meaning.

Conditions of life have changed much in the last few decades. In August, 1830 (81 years ago), the district which is now Chicago contained only 27 voters. There were only four white families in Chicago besides the garrison and the fur agent. However, just at this time, the population began to grow. In 1832, the taxes amounted to nearly $150. In 1834, the population was about 2,000. The Chicago & Galena Union Railroad (now the Chicago & Northwestern Railroad) was completed as far as Elgin in 1853. So that only 60 years ago the farmer of Rockford or Beloit or Oregon or Dixon, hauled a load of corn to Chicago in a wagon over muddy roads, often impassable. The journey occupied three to five days each way. He brought back with him calico for a dress, some molasses, sugar, coffee, etc., and a little money. His farm work was done with few implements, extravagantly, uneconomically. Like his travel, his daily work entailed the expenditure of a vast amount of time, muscular labor, and mental effort, with a comparatively small recompense in the way of crops, in spite of the virgin richness of the soil.

Compare this with present-day farming methods since the introduction of farm machinery and scientific agriculture, when the same amount of effort produces a much greater income.

Today in the field of big business, spurred by competition and rebellion at the high cost of living, scientific efficiency has made its appearance. The great attorney, Louis D. Brandeis, in his speech before the Interstate Commerce Commission,[1] as counsel for the seaboard shippers, startled the business world by showing that by the application of the principles of scientific efficiency the railroads of the country could save $1,000,000 per day above their present earnings. His statements were backed up by abundant testimony. And incredulity found facts staring it in the face.

These principles are being adopted today and are making rapid advancement. And their commercial value has been pretty well demonstrated, even in work as old and primitive as lifting and carrying large stones, and in brick laying, which goes back to the days of Nineveh and Babylon, 3500 years ago. By the application of scientific efficiency, and without machinery, the results of the same amount of muscular work can be increased many fold. For instance, where 120 bricks per hour was the fastest bricklaying done in Boston by any man, 350 bricks per man per hour has been found to be an easy average, by changing his methods of working. And where a laborer can ordinarily lift and carry into a car only 12½ long tons of pig iron per day, it has been found that he can handle 47 or 48 tons per day without machinery.[2]

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[1] Decision of case rendered by Interstate Commerce Commission, February 23, 1911.

These results depend upon the economical application of energy, so that the most useful work will be secured for the expenditure of a given amount of energy.

The work of Dr. J. G. Holmes[3] under Prof. W. S. Hall in the physiological laboratory of Northwestern University, showed that by ascertaining the correct physiologic load and the proper rhythm, a given set of muscles would not become exhausted as occurred under other conditions of work, but could work easily, for hours without showing signs of fatigue. Under such scientific conditions, the amount of work done by a given set of muscles in a given time was 7½ times as great as was formerly possible by the same set of muscles in unnatural conditions.

So much for the evolution of efficiency—an endeavor to change extravagance into economy, to secure a greater amount of useful work out of a given expenditure of energy.

The question naturally arises,

Is the dentist securing an adequate return for the amount of vital energy spent in his work? If not, there is need of an efficiency engineer or business doctor to point out the manner in which he can secure a larger net income, shorter hours of work, and better professional standing.

Now if I am correct in my suspicions that good dental work is, I will not say valuable, but *invaluable,* as suggested below, then what the dentist needs is to collect undoubted proofs of the causal relation between mouth conditions and bodily disease.

Will the dentists' fees grow larger or smaller?

Will the future find the dentist a more important man in the community than he is now, or less important?

Will his earnings be greater next year than this year or will they be less?

Will the people try to get along with as little work as possible and consider that the less money paid for dentistry the better?

Or will they want the best work that money can buy?

The answer to these questions lies with the dentist himself.

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[2] Frederick W. Taylor, "The Principles of Scientific Management." The American Magazine, March, 1911, p. 578.

[3] "The Capacity of the Human Muscle for Work," by Dr. J. G. Holmes, Jr. American Medical Association, December 19, 1903.

The field lies before him, and all he needs to do is to go in and possess it.

The only weapon he needs is the peaceful hammer of *facts*.

If he will only collect the data and correlate the mouth conditions with the conditions of bodily disease resulting therefrom and prove the facts, he need never lack a good income thereafter.

All it needs is facts and publicity.

Dr. Hunter's article (mentioned below) gives the dentist a shivery forecast of unpleasant possibilities in loss of prestige. And such possibilities are not entirely imaginary.

Look at the serious inroads which the medical profession has suffered within the past ten years from the growth of Christian Science and Osteopathy. This loss of income is directly referable to the fact that the physician was (for the most part unconsciously[4]) playing the part of a fakir by encouraging people in the superstition that drugs possessed miraculous properties (which the recently developed science of pharmacology has shown that they do not possess).

And while Christian Science and Osteopathy have become popular partly because they did actually benefit people, yet as in all cases of competition a new-comer can gain a foot-hold only through some weak points in the adversary who occupies the field he desires to enter.

The forces which are shaping the evolution of the dentist of the future are at present working with extreme rapidity. And a tremendous change in status is occurring at the present moment.

We can learn a few points from geology.

The ideas of the early geologists, that the formation of the earth has occurred through tremendous sudden upheavals and cataclysms, have given way to a knowledge that geologic formations are occurring today, right before our eyes. The earth is being raised in some places to form future mountains. The surface is sinking in other places to form the beds of future oceans. Rock formation is going on just as surely today as it ever did. But because these changes are slow in comparison with our daily activities, such as building a house, etc., we are unconscious that anything great is occurring.

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[4] I say "unconsciously" because when the average physician of ten years ago attended medical school the science of pharmacology was unknown in this country. Today there are laboratories of pharmacology in each of the several large, well equipped medical schools, where the facts of the action (or non-action) of drugs are demonstrated by actual experiments upon mammals.

So the evolution of dentistry is undergoing a change. It is donning new garments. And the rapidity of the transformation scene as compared with the previous history of mankind is as great as a "lightning change" act in the theater.

But taken in connection with the routine of daily business, the dentist does not realize how swiftly he is moving. He is like a man engaged in absorbing work on a cake of ice which is being carried swiftly along by the strong, silent current of an immense river. The things about him are also moving; and, unless he arouses himself from his work and stops to look at some stationary landmarks on the distant shore and compute his actual rate of motion he would scarcely credit the fact that he is moving at the rate of ten miles per hour. For he knows that when his cake first began to move from its winter fastness it scarcely moved at the rate of a foot per minute.

Now there can be little doubt that this swiftly occurring evolutionary change carries with it various possibilities of danger to the dental profession.

It is my intention to point out some of these dangers, and also to point out the remedy.

It is not my intention to do as the doctor does who informs a patient that he has an incurable case of heart trouble or Bright's disease and that there is absolutely no hope for him.

I propose rather to point out that the furnace pipe in the basement is overheated and is likely to set the building afire. But by the timely application of a few pieces of asbestos and some sheet-iron the danger can be averted.

The dangers to which I refer are both internal and external to the dental profession. The internal dangers I will consider in my next article.

The external dangers consist principally of public opinion. Public opinion may be considered from the standpoint of

1. The physicians' opinion of dentists and of the value of dentistry.
2. Public opinion in the ordinary meaning of the term—the laity, the great mass of the people.

THE PHYSICIANS' OPINION OF DENTISTRY.

There seems to be a growing tendency among physicians to pay more attention to mouth conditions. There are, perhaps, a few physicians who realize that oral conditions are of extreme importance. But most physicians have very hazy ideas on this important subject, and almost never pay any attention to the condition of the teeth or gums.

One of the notable exceptions is Dr. William Hunter, pathologist of the Charing Cross Hospital of London. His address was delivered before the opening session of the Faculty of Medicine of McGill University of Montreal, Canada, October 1, 1910. The article was printed in the London *Lancet* of January 14, 1911. A sensational review of this article appeared in *Current Literature* for August, 1911, under the heading, "An English Physician's Denunciation of American Dentistry." Reference to this article has been made in editorials in the *Dental Cosmos* for October, 1911, and in THE DENTAL REVIEW for September, 1911, and February, 1912.

This article (the original, the review and the comments) furnishes a more forceful illustration of what I am trying to bring out than anything I can say. For Dr. Hunter's article is not something that *may* happen. It has already happened. Hence, we may consider that this subject is an "is-er". You remember the story of the farmer who wished to buy a horse. He said, "I've had horses that 'used to be' fast. I've owned those that were 'going to be' fast, but now I want an 'izzer'." So in this subject, we have an "izzer".

THE PUBLIC OPINION OF DENTISTRY.

Let us first consider the general effect of public opinion upon fees for professional services.

This is nowhere better illustrated than in the case of physicians.

It may not be known to dentists, but it is said that quite a large proportion of the physicians in the United States have incomes of less than $600 per year. Whereas, the average income of the physician in Great Britain is between $1,100 and $1,250 per annum.[5]

It must be remembered that twenty-five or thirty years ago medical colleges in the United States had few entrance requirements except to be able to write one's name. The course consisted of two winter terms of six months each. The student presented a certificate from some physician, preceptor, stating that he had "read" with him for one year previously. It was the rule for all the students to successfully pass the final "examinations" and receive their diplomas, which were equivalent to a license to practice medicine. State Board examinations are a recent innovation.

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[5] See Journal American Medical Association, Vol. 49, No. 17, October 26, 1907, p. 1450.

The direct relationship existing between earnings and knowledge or scientific equipment, can be seen when we note that the physicians having the smallest incomes are apt to be those who have the poorest educational equipment.

Dr. J. N. McCormack, Chairman of the Committee on Organization of the American Medical Association, spent some months in studying the status of the country doctors of Great Britain and comparing them with those in the United States.[6] His observations showed the monetary advantage of higher scientific and social standing in the community.

He says: "A good part of my vacation was spent in the small towns and country districts of England, Ireland and Scotland, and I have been interested in such a study of professional conditions as would enable me to institute practical comparisons between them and those existing in our own country. * * *

"On the other hand, I got the impression, even more distinctly, that, as the result of high standards of requirements, so long established as to be fixed policies of both the profession and of government, the rank and file of medical men in Europe have had such advantages, in both preliminary and professional education, that there is an entire absence of the illiterate, hopeless element which forms such a large substratum in almost every community with us, and which, in spite of the rapid advance of requirements in the last few years, must continue as a perplexity and reproach to the organized profession, and a danger to the people dependent on them, until removed by time and the hand of a kind providence. Here probably in equal proportion as among the highly educated classes with us, a physician may be a failure for the lack of practical knowledge, of the common sense essential to real success in any vocation, but, at least, he is not an ignorant loon who does violence to his mother tongue every time he opens his mouth or writes a prescription. His preliminary and technical education have not only been such as to develop all that was possible in him, but to give him respect for his profession and to command a respect for it in the community, in striking contrast with what is common with the varying but considerable percentage of the profession in many sections of our own country who never should have been considered for admission to its ranks. Because it deserves it, for the reasons stated, the profession as a whole occupies a very much higher place in the public estimation than with us. The evidence of this is seen on every hand. * * * * Although the cost of living is much less here, the profession is much better supported than with us. In my judgment, this is because the profession deserves it. The fees are certainly better on an average than in the older sections of our own country."

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[6] J. N. McCormack, M. D., "Conclusions from a Comparative Study of the Status of the Medical Profession in Great Britain and the United States," Journal American Medical Association, Vol. 47, No. 13, September 29, 1906, pp. 1043 and 1044. (A letter written to the Journal A. M. A., while in Great Britain.)

Now while the necessity for the dental student to acquire mechanical dexterity before the age of twenty-one, may place a greater bar to the indefinite raising of entrance requirements, than in the case of the medical students, the same law of public opinion which determines rates of fees with physicians must hold good with dentists. And while supply and demand are doubtless potent factors, by far the most determining influence is public opinion.

HOW TO INFLUENCE PUBLIC OPINION.

I have given considerable thought to this subject, because I consider that the mouth is of prime importance in the bodily economy. And anything which will cause a lessening of appreciation of the value of dentistry I would consider not as a misfortune to the dental profession only, but as a catastrophe to the whole human race. I deprecate anything which can encourage the idea, native to many people, that the farther they can keep away from a dental office the better for them.

This idea, which has its origin in the instinct to avoid pain, is rooted in feelings as old as animal life itself. Things which were associated with pain were harmful, and things associated with pleasure were beneficial. This co-ordinate or simultaneous occurrence of pleasurable sensations and beneficial results have been so common that they have become built into the very nature of protoplasm itself.

It has been noted with the unicellular organisms that they move towards the stimuli which affect them favorably and move away from the stimuli which affect them unfavorably.[7]

Hence, we find that today in man, pleasant emotions favor Anabolism (building up processes) and unfavorable emotions favor Katabolism (tearing down processes.)

People have been used to calling in the physician to relieve them from pain, whereas they consider that if they go to a dentist, he is going to hurt them.

This will probably account, in part, for the greater number of physicians than dentists, there being about 3½ times as many physicians as dentists in the United States at the present time.

Whereas, if dentistry gets its natural desserts and the medical profession its desserts, the ratio will be reversed, and there will be over four times as many dentists as physicians.

Hence, I hope that no dentist will infer from anything I may say in this or any other paper that I am "knocking" dentistry, as my object, on the contrary is to stand for the elevation of the dental profession and its proper recognition in the community.

I feel quite sure that the dentist himself scarcely realizes the importance of the strategic position which his work occupies in the economy of the body under the conditions of modern civilized life.

As I have stated before,[8] it may turn out that most of the bodily infections occur because of bad mouth conditions.

The secretions of the nose have been shown to be antiseptic. The fluids of the mouth must possess, under normal conditions, strong bactericidal properties. Of the mechanism of this protective office, we know very little. But no one who watches a babe, sucking unconcernedly away at a toy, dropped carelessly at intervals on the sidewalk, covered with dried sputum and dust, can doubt nature's kindly protective offices, or few if any infants would survive.

So attacks of pneumonia, tuberculosis, or other infections may be averted by a clean healthy mouth. But we have no facts to back up such an assertion. While the recovery or death of a patient may depend upon the oral condition, we have no data to prove it.

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[7] See Herbert S. Jennings, "Contributions to the Study of the Behavior of Lower Organisms," p. 248 and ff., Carnegie Institute 1904. Also, J. Mark Baldwin, "Mental Development in the Child and in the Race," p. 199, second edition, New York, 1897. Also C. Lloyd Morgan, "Introduction to Comparative Psychology," p. 257, London, 1894. Also E. L. Thorndike, "Animal Intelligence," 1898, The Psychological Review, Monograph Supplement, 2.

[8] Dental Review, January, 1912, p. 2.

Who knows what the constant swallowing of pus will do to a person? No one knows. Suppose it is only one drop in ten minutes, six drops per hour, 144 drops in 24 hours; or suppose there are three ounces in 24 hours?[9] Many a dentist could cite cases of wonderful improvement in health of patients after proper dental treatment.

But such testimony to be effective, lacks one vital factor. It must combine two things.

1st. A careful dental report of case.

2nd. A careful medical report of case.

If a number of such cases, several hundred, or several thousand, could be collected and written up, and the subject were treated mathematically as biological and statistical matter is beginnig to be handled nowadays by "biometricians," it could at once be proven what the relation of dentistry is to bodily disease. And by the employment of coefficients of correlation, it can be proved mathematically just how close and important the relation is.

After such relation has been shown in scientific articles, popular writers will soon spread the facts. The present educational campaign by newspaper publicity, would then within a single year place the dentist and his services and importance in a far different light from what he now occupies in the public mind.

Scarcely any layman (or even doctors, as witness Dr. Hunter's article) appreciate the immense difference between good dentistry and bad dentistry, between good mechanics and poor ones.

Everyone considers that he himself employs a "good" dentist. His dentist is always reassuring. He has confidence in him. He likes him; "he don't hurt", and there his thoughts end.

But when the facts are known, it will appear that good dentistry differs from bad dentistry as daylight does from darkness; as clear spring-water does from a foul, muddy pool; as life does from death.

And when this fact is once established in the public mind, then people will be only too glad to pay good fees for good service. They will be afraid of the advertising quack. A cheap gold crown for $5.00 will not look so beautiful and attractive to them as it does now. They would rather pay $50 or $100 for one that fits and has proper contact and coutour. And good, honest service will be well paid; whereas now, tact and brag sometimes profit while mechanical skill may go unrewarded.

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[9] See case cited by Dr. F. H. Skinner in "Pyorrhea and Prophylaxis," read before the New York State Dental Society, Albany, May 4, 1911, published in *Dental Cosmos,* January 1912, p. 41.

This is one of the greatest curses of dentistry today, this lack of clear-cut, distinct, public notions of the value or the need of dentistry. The public has no clear notions, because the dentist himself has no clear notion. The reason why the dentist's ideas are not clear-cut is that the facts have not been collected and correlated so as to prove something. Individual observations are too few and too liable to error to be conclusive. But if hundreds or thousands of cases could be collected and correlated in such a way as to absolutely prove the vital relation of the care of the mouth to other conditions of bodily health, and these statistics are published in medical as well as popular articles, you would see every physician insisting that his patients go to good dentists and go often.

In those days, prophylaxis, instead of being a rarity, will become as common as manicuring is today. How barbarous and half-civilized we really are. Like people who neglect to bathe, but employ strong perfumes! Like the Oriental countries which overlook sewage and clean streets, but use lots of incense.

So people clean and polish the nails, while the teeth are left septic and uncared for. I have no doubt that death claims thousands of such victims every year. And there is no one at the funeral to suggest that if some dental work had been done instead of the manicure work, the corpse would be still alive.

But collection of good, scientific data in proper form, will prove this, if it is so. And the collection of such authoritative data and its wide dissemination by a campaign of education, such as has already been started, will save thousands of lives to the nation every year.

But a campaign of publicity without facts to back it up, is of doubtful value.

The dentist owes it not only to the welfare of the race but to his own pocketbook as well, to prove these facts.

People are able to pay for good dentistry. Due to the immense growth of big business, wealth has increased so rapidly that the country is now filled with people so rich that they cannot spend their incomes.

Why should people who have $5,000 to $20,000 per year to spend on automobiles, begrudge a dentist his fee?

I know a millionaire whose income is over $1,000,000 per year, who kicked at a dental bill of $150. And it was a very reasonable bill at that. And the dentist was a very fine operator.

I know a well-to-do man who has Bright's disease in an advanced form. His doctor sent him to a good dentist to find what the condition of his mouth was. This dentist found a lot of ordinary, poorly fitting work, with a loose bridge, and plenty of irritation, pus and decayed food material. The man asked this dentist what it would cost to put his mouth in first-class condition. The dentist, estimating on tearing out all of the old work and putting in good new work, gave a very moderate price of $350 to $400. The man then went back to his old dentist, had the bridge fastened down, let his Bright's disease progress, and is doing nothing. The only thing that man lacked was education as to the value of good dental service. He had money to pay for good service, but he looked upon it as a luxury, much like buying a new overcoat when last year's overcoat is not yet worn out. He couldn't see why good dental work would be of any advantage in overcoming his Bright's disease.

This is the general condition of the public consciousness. What it needs to overcome this attitude is:

1st. Facts.

2nd. Publicity.

The question then confronts us, how can we secure facts, and how can we prove anything by those facts?

The first step necessary is to collect the data we are going to use. The second step will be to treat this data by modern scientific mathematical methods, so as to establish the relations we are trying to prove.

We have all heard one man get up and give his individual opinion with great earnestness, and another man get up and give an opposite view with equal earnestness. Neither of them can prove which is right, and the judgment of a fair-minded bystander must remain largely "on the fence." You have heard of the dispute between two darkies as to "wheddah a lobstah is green or red."

Too much professional blood has been shed in such indeterminate though zealous arguments. Such are the methods of metaphysics. They refer us back to the mental gymnastics of the ancients and of the middle ages. But the methods of modern science offer a more definite solution of these problems.

It may be possible that if scientific methods are applied, the long contested question of whether pyorrhea is of local or systemic origin can be settled to remain settled. The facts can be correlated in such a manner as to prove what the truth is, so that all can see what are the fields of proper treatment.

It seems to me that the present hour is a critical one in the history of dentistry. It appears that the dentist of today is standing at the dividing of the ways.

One path is a short, straight, easy one, leading to high professional standing among the laity, with a correspondingly large remuneration.

The other path is the slow, hard, tortuous, uncertain path of the ancient, haphazard evolution, passing through dark places, and terminating, we cannot see where.

Which shall it be?

PROCEEDINGS OF SOCIETIES.

THE CHICAGO DENTAL SOCIETY.

A regular meeting of the Chicago Dental Society was held on Tuesday evening, December 19th, 1911, at 8 o'clock, in the Northwestern University Building.

The President of the Society, Dr. G. Walter Dittmar, occupied the Chair.

Dr. Frederick B. Moorehead presented a paper entitled :"Some Notes on the Interpretation and Treatment of Certain Types of Infection."

DISCUSSION.

DR. EDWARD C. ROSENOW:

Mr. President, I want to state that I am neither eminent as a practitioner of medicine nor as a bacteriologist.

This is my first attendance at a meeting of the Chicago Dental Society, and in listening to the reports of your standing committees I have been very much impressed, and I like the way you do things. I am especially pleased to know of the establishment of free dispensaries for the examination of the teeth and mouths of school children. I hope the Chairman will have no trouble in getting volunteers for this work.

One of the questions in connection with Dr. Moorehead's paper is that of hematogenous infection of teeth, especially the pulp. That until recently was to me a rather new thing. I thought when the pulp was infected it always came from a tooth that had not been properly filled, or had some other direct communication with the mouth. I do not believe the bacteria penetrate a healthy mucous membrane covering the tooth and the tooth itself. The presence of exceedingly small crevices which a bacterium could find and not the dentist must be thought of as the source of infections which would seem to have their origin from the circulation. On the other hand Dr. Moorehead is perfectly right when he says that hematogenous infection of an irritated pulp from a rather deep filling in which temperature changes occur is as possible as in any other part of the body, such as the joints in gonococcus infections. It would certainly seem more difficult for the bacterium to get through the healthy tooth than for it to get through the soft tissues of the knee from the outside which is considered quite impossible.

The importance of mouth infection to the general health of the individual was recently discussed by Dr. Gilmer before the Chicago Medical Society. I was very much surprised when Dr. Gilmer threw on the screen X-Ray photographs of blind abscesses about the teeth that had undoubtedly been a source of intoxication to the patient for a long period of time without the patient having local symptoms. I knew there were abscesses that would give general symptoms, but that that sort of abscess could occur and the patient not know that he has difficulty about the teeth, and yet be a source of general infection, was to me a great surprise. The general effects of intoxication from foci about the mouth or teeth may be only a general feeling of ill health or even arthritis, nephritis or a general early arterial and renal degeneration. We know that this is also true with respect to abscesses in other regions of the body.

I have myself made bacteriological studies of the blood, of not less than six cases of endocarditis, which, from all the evidence that could be brought to bear, were the result of infection about the mouth and teeth. Three of these cases were pyorrhea alveolaris, in which there were probably some hidden abscesses, with absorption and local inflammation. Two of the lesions in the mouth were acute infection such as Dr. Moorehead described, the condition being acute inflammation of the bone, with no drainage, the patient getting an endocarditis suddenly. The cases of endocarditis that follow some chronic condition, such as alveolar abscess or pyorrhoea characterized by the presence of modified pneumococci in the blood with little or no virulence, while the bacteria which are found in endocarditis following an acute condition are highly virulent.

The former cases run a protracted course, but are the more fatal of the two forms. The mechanism of immunity in the former is so altered that nothing we can do modifies very much the course of the disease.

As I see it, the cause of gum boils that patients complain of, which repeatedly close over and then discharge again, should be ascertained and removed at once, even if it means the sacrifice of a tooth. The bacteria which produce this and allied conditions are of low virulence, but if this process is repeated often enough they will probably adapt themselves and learn to grow in the blood, and finally lead to an endocarditis and death.

Just a word regarding the few cases that I have had the pleasure of studying with Dr. Moorehead. The fusiform bacillus, the cause of the infection in the case cited by Dr. Moorehead, has been discussed quite fully. I feel that the reason why the bacteriologist or interne who examined the pus in the other case missed this organism is that it does not take the ordinary stains readily. I had a case sometimes ago of fusiform infection that followed appendicitis. The pus was from the periosteum of the tibia. The man developed multiple abscesses and was very ill. I examined the pus and found nothing that I felt looked like microorganisms. The pus was fresh and was foul smelling, and hence it could not be sterile. I used some more penetrating stains, and by so doing found the fusiform bacillus in rope like twists. I had the greatest difficulty in getting a culture. The organism was present in pure culture without any associated bacteria. It took two weeks to grow it on artificial media, and unfortunately the patient was dead by that time.

In another case of infection about the neck where the organism could not be cultivated the pus itself was heated and injected, and it seemed to have the immunizing power very much as in the case Dr. Moorehead recites.

Another patient who had a very extensive, so called, brawny induration of the neck, was referred to me by Dr. Stall. On an examination of the pus from sinuses that had formed from various incisions I was not able to find anything but staphylococci, but after the tenth or twelfth examination, I found the fusiform bacillus. Finally, after being able to grow this bacillus and vaccinating him, the mass softened and became very much smaller, but finally carcinoma developed at the outlet of the sinuses which discharged for over one year. The fusiform bacillus which is undoubtedly one of the chief causes of so-called brawny induration of the neck, also causes the condition of noma, which you are familiar with. That is an acute form of this infection. The case Dr. Moorehead cited I feel was an infection that simulated noma very closely in the beginning.

I have heard much regarding pathology in relation to dentistry, and I want to say a word to the Chairman of the Program Committee. I am glad your programs do not consist only of how to fill a tooth, but that they reach out and take in broader fields. The study of bacteriology and its relation to mouth infections and conditions allied to it is of paramount importance, and it is not a question of the bacterium that is present so much as the virulence of the infection. There are cases of staphylococcus infection that do not produce pus as is the rule, but instead produce profound constitutional symptoms, and we have cases of streptococcus or pneomococcus infection that produce local abscess without much general intoxication.

Dr. Rosenow

In replying to Dr. Jones' question said:

The manner of conveying the material for examination is very simple. All of you should provide yourselves with some test tubes with cotton plugs, in which are kept some sterile swabs on a wire or wood, and when you have an abscess or other material for bacteriological study place it on the swab or drop into the sterile test tube and send at once. It does not usually kill the bacteria to dry the pus, but it is important that you get the pus to the bacteriologist as soon as possible. Some of the bacterial swabs sent out for diphtheria will work very well, and there is no reason why you could not smear some of the pus on blood serum and send both.

Just one word more regarding the emphasis Dr. Black places on the infections of the mouth, especially pyorrhea alveolaris. I believe it is exceedingl important that drainage be established. It is better to sacrifice the teeth than the life of the patient.

Dr. Thomas L. Gilmer:

The Chicago Dental Society is indebted to Dr. Moorehead for the presentation of a most timely and important paper on a subject which should greatly interest us. Bacteriology and pathology are not too well understood by dentists. That we have so much else to employ our minds in connection with our practice, is no legitimate excuse for neglecting a most important part of our calling.

The dentist has as much need for the science of disease as has the members of any other branch of the healing art. We need just such papers as the excellent one presented tonight, to quicken us to greater activity in the pursuit of all facts relative to the cause of disease, in order that we may combat it more intelligently.

The mouth is the greatest portal of entry for bacteria to the system; it is not only the greatest portal of entry, but it affords all the essential elements, viz: heat, moisture and pabulum for the development and growth of microorganisms. Few mouths are free from disease and as a focus of infection, they exceed all other parts of the body.

Nearly twenty years ago the lamented Miller isolated fifty-eight varieties of bacteria from the human mouth, and Black verified his findings. When we realize that there may often be found in the mouth the staphylococci, streptococci of various kinds, pneumococci, tubercle bacilli, fusiform bacilli and spirilli, actinomyces, Loefiers bacillus of diptheria and other pathogenic bacteria, we realize that there is much for all of us to learn of bacteriology and pathology.

While I agree with the essayist, that the dentist, highly developed in mechanics, finds greater interest in operative and prosthetic dentistry, and that he may not develop great interest in the field of theoretical and applied pathology, still am unwilling to believe, that because, he has special pleasure in mechanics that he may not be equally interested and skillful in bacteriology and pathology, provided he has the mental capacity for it and is fully cognizant of its importance to him.

The reason the dentist is not more interested in pathology is, in my opinion, due to the fact that he was not, in his student days, made to realize the importance of this branch of his curriculum.

The science of diagnosis is a most important part of our calling, and to be a good diagnostician one must know much of pathology. Since we see so much more of staphylococcus infections in the mouth, we are liable to forget that there are other more serious infections in the oral cavity, which from lack of diagnostic ability, we may fail to recognize, and occasionally serious results ensue.

Staphylococcus infections arising from unsterile root canals are usually inconsequential in comparison with oral infections caused by other bacteria, which as the essayist has correctly said, require very different methods of treatment. If in the ordinary alveolar abscess, due to the staphylococcus, pus is voided early and good drainage maintained, we may expect a rapid abatement of all of the acute symptoms. As was said in the paper, the greatest danger in these infections lies in the inability of pus to pass through the overlying periosteum. Just why the periosteum offers greater resistance to pus in some cases than in others, is not fully understood. It may be because it is thicker or more dense, as was said, or to both, or it may be due to less tenacious bony attachment. My observation leads me to believe that the latter is sometimes the cause.

It is rare that pus can be sufficiently evacuated through root canals, therefore, we should early anticipate its formation and incise the mucosa and periosteum. This avoids the burrowing of pus under the periosteum and prevents the possibility of serious bone involvment. All agree that when practicable, pus should be evacuated within the mouth, but there are times when this is not practical, especially near the angle of the lower jaw, owing to the swelling of the soft tissues and to the depth the pus lies below the surface. In such cases it is far better to make external incisions, early, that injury to the bone and other graver dangers may be obviated. The prejudice against external incision is due to the fact that a facial scar results. It is far better to leave an insignificant linear scar than to take serious risks, such as septicaemia, necrosis, or of the burrowing of pus down to the clavicular region. Not infrequently pus is voided on the face in spite of the greatest efforts to cause it to discharge in the mouth. The contrast of a scar thus made as compared with one made by the knife is markedly in favor of the knife.

In connection with hematogenous infections Dr. Moorehead spoke of a certain kind of abscess originating on the sides of roots not affected by pyorrhea in connection with tartar deposits on teeth. I suppose he refers to the lateral abscesses of Black. There are many instances of hematogenous infections in connection with the roots of teeth, some of which were indicated in the paper, but we have no less an authority than Black, that serumal lime deposits on the sides of roots of teeth having live pulps, such as the essayist cites, are never found unless there is an opening, be it ever so small, connecting the deposits with the mouth at the gingival border. This is one form of pyorrhea alveolaris, and in such cases when an abscess forms, the bacteria causing it reaches the point of infection through the minute canal leading from the gingival border, therefore is not of hematogenous origin.

Undoubtedly many apical abscesses of the jaws are of hematogenous origin, since there are no other avenues in some cases, other than through the blood or lymph streams for the bacteria to reach this portion of the roots.

Dr. Moorehead has called attention to the seriousness of infections associated with impacted lower third molars. Whether my experience in connection with these infections has been peculiar, I do not know, but it has been rare when bacteriological examinations have been made in such cases, that I have not found the infection due, either to the streptococcus or to the pneumococcus. On the other hand most cases of alveolar abscess, pure and simple, in connection with septic root canals, are due to the staphylococcus. I am not ready at this time to state that all infections resulting from impacted lower third molars are due to the streptococci or pneumococci, or that all abscesses arising from infected roots are due to the staphylococcus, but in the main believe to be true and am at work along this line and expect either to prove or disprove the supposition.

Jordan, in his recent book on bacteriology, states that bone is rarely attacked by the streptococcus, and that infections of bone are generally due to staphylococcus. In streptococcus infections pus forms slowly or not at all, or at least in appreciable quantities; while in staphylococcus infections pus forms quickly, and generally in alveolar abscess, in considerable quantities.

Dr. Moorehead's statement that streptococci may lie dormant in the tissues for a time, then light up again in a second or third period of activity, is true. I have frequently observed this. This may be due either to periodical increase in virulence of the bacteria, or to a lowered vitality of the phagocytes. With your permission I will cite a case I have under my care at this time, which verifies the essayist's statement.

Miss H., twenty-two years of age, had an impacted lower third molar. An infection resulted and her dentist removed the tooth at once. Immediately the conditions were greatly aggravated. The face become much swollen and trismus resulted. The swelling extended to the neck, the pain was intense and the patient was seriously ill. After a time the infection subsided without discharge of pus. A few months later she had a similar attack with identical symptoms. Two months later the infection again became manifest. At this time the patient came under my observation. I found the condition similar to that elicited by the previous history. There was a large indurated swelling reaching from the parotid region well down on the neck and extending forward to the symphis of the lower jaw. The pain was severe. The temperature was not high when I saw her, at no time above 101.4 degrees. The radiograph did not disclose a fracture or a part of a tooth, or other abnormal condition in the bone. The onset was slow, there was no perceptible fluctuation in any part of the swollen region. I was satisfied from the history and symptoms that I was not dealing with a staphylococcus infection. Hot fomentations, morphine and salines were ordered. Little or no change for the better was observed in twenty-four hours. The patient was then anaesthetized and an incision made through the skin near the angle of the jaw, followed by a blunt dissection up toward the region formerly occupied by the third molar. After considerable exploration a small amount of pus was found and evacuated. The wound was irrigated with salt solution, gutta percha tissue was inserted to facilitate drainage, and hot moist boric dressings applied. Much serum and a small quantity of pus was discharged. The symptoms are slowly subsiding, the pain is relieved, the temperature is normal. The bacteriological report by Dr. Baugher of St. Luke's hospital is as follows: "Five types of bacilli are present, which are recognized by their morphology and cultural characteristics. Some of these are known to be non-pathogenic and probably all are non-pathogenic. Three of these grew spores.

A Gram positive coccus is also found in the original pus in pairs and in short chains. This organism did not grow upon blood agar plates, with the above organisms. It grows, however, deep in blood agar tubes and in deep broth culture tubes. Most of the organisms in the cultures occur in pairs. This is probably the pathogenic organism in this case and is either an atypical streptococcus or an atypical pneumococcus."

A report of a somewhat similar case may be of interest, which indicates the seriousness of that infection. A man about seventy-five years of age had an infection in the region of the second molar on the lower jaw. This tooth served as one of the abutments for a bridge. The patient consulted his dentist regarding the condition. The bridge was removed and an attempt was made to reach pus by an oral incision. The condition grew worse, the swelling extending and the pain increasing. I was called by Dr. Ely, his dentist, in consultation with Drs. Capps and E. Wyllis Andrews. It was thought that removal of the tooth might be indicated. When I saw the patient the swelling had extended to the opposite side of the jaw, it was brawny and the tongue was elevated by the swelling in the floor of the mouth. The temperature was 101 degrees. I was sure that removal of the tooth at this stage was contra indicated. The condition was what is known as Ludwig's angina. There were indications that unless something was done to relieve the condition edema of the glottis would result. On my recommendation the patient was removed to the hospital. We made deep incisions on both sides of the submaxillary regions. No pus was observed, but much foetid dead blood was found and removed. This was followed by normal salt irrigations and hot moist boric dressings were applied. Profuse serous discharges necessitated frequent renewal of dressings. In this case streptococci were found in smears, and cultures showed pure streptococci. Had we not made the incisions for drainage, I am sure that edema of glottis would have resulted. The patient was at once relieved from the intense pain and made an uneventful recovery.

The fusiform bacillus is undoubtedly often the cause of serious infections in the mouth, such as noma. Some years ago I reported a peculiar infection of the gums, which I named acute ulcerous gingivitis. Drs. Weaver and Tunniclif made cultures for me and demonstrated the fusiform bacillus as the pathogenic organism in this disease.

It is fortunate that we have been permitted to listen to Dr. Rosenow's discussion of this important subject, and we should profit by the words of warning he has uttered regarding the danger of endocarditis, renal and other diseases, which may result from chronic abscesses of the jaw.

Dentists are taking great risks in their attempts to retain in the mouth teeth with incurable abscesses and teeth whose peridental membrane has been largely destroyed by pyorrhea alveolaris. Teeth with deep pockets about their roots which are so loose that they must be tied in the jaws, are always a menace to the patient's health, especially if their physical condition be lowered. Formerly we extracted too many teeth, now too few.

Dr. G. W. Cook:

The discussion on Dr. Moorehead's paper is very much like the sentence in the first paragraph. He says: "There is but little left of pathology after inflammation and neoplasms have been removed." There is but little left to be discussed after one studies Dr. Moorehead's paper, for he has discussed the pathology of inflammation both from clinical and pathological phases. The etiology of inflammation has been so thoroughly investigated in the past that all that needs to be said is, bacteria. The essayist puts a strong point in the foreground when he says, "the two determining factors in infection is the virulency of the bacteria; second, the general resistance of the host." Inflammation is the reaction of the tissue against the invading microorganisms, and of course these microorganisms are bacterial forms, for they seem to produce the greatest reaction of any forms of microorganisms. If the tissues are not of such a nature as to react quickly and readily against certain invading bacteria, it must be due to an extent to the virulency of the organism, unless bacteria have been so few in number as to make the tissue become tolerant to their presence. When tissue is in a histolytic process the tissue changes have been so great as to make it impossible for a strong reaction to take place, but if there is a reaction the phenomena of necrobiosis is the immediate result. It also happens many times in cases of strong reaction of the tissues to the invading bacteria for the tissues to come suddenly to death. This is due to the poisonous effects of the toxines and the active reaction of the tissues against their presence. The writer has so well emphasized the importance of an early and proper interpretation of the condition. In such cases one cannot depend upon anything so thoroughly as upon the clinical features of the process, because it is quite impossible to always isolate and determine the virulency of the bacteria; for it is a well known fact that the virulent properties of bacteria change materially with the changing of their environment. So in such cases we are bound to rely upon our clinical ability to properly interpret the phenomena present in such cases.

Oral pathology is very largely the pathology of the symbiotic action of bacteria. So far no one has isolated a pure culture from any given pathological lesion in the mouth or the adjacent parts that have been infected from the mouth. The essayist speaks of a case of infection from the fusiform bacillus and the spirochaete. This is probably the best illustration of what two bacteria do when their action is advantageous to each other. These organisms have been studied by a number of authors, and their infectious condition depends largely upon each other. I am thoroughly convinced from my study of the mouth that these two organisms are quite commonly present in the mouth, but there are certain activities that take place when these two organisms are thrown together under certain conditions. It is quite impossible for me to say under what circumstances their symbiotic actions become so virulent. The spirochaete dentium was described by Miller in 1883, and from microscopic appearance it is identical with the one that is universally found in certain pathological lesions with the fusiform bacillus. I saw a case in which a dentist in an attempt to remove an impacted third molar had of necessity to lacerate the tissues considerably, and in twenty-four hours the tissues were so badly swollen and inflamed that the condition seemed quite alarming. The patient had a temperature of 103 degrees, with rapid pulse. I was asked in to see the case. An extensive operation was advised by a general surgeon; I took cultures from the parts at the time and was furnished with an abundance of tissue from the parts. The fusiform bacillus and the spirochaete were quite extensively imbedded in the tissues, and a microscopic examination was made which revealed the fact that the tissue was invaded by both of these organisms, and in places they looked like a mass of fibrin of the blood. The patient made a rapid recovery for the first two or three days after the operation, but soon relapsed into a rather languid state and remained that way for some weeks, finally making a good recovery.

The essayist has put forth the idea of the presence of the staphylococcus in most all infectious conditions, especially where pus has formed. There are very few mouths in which you cannot find present the staphylococcus. Where the pulp of a tooth has undergone putrefactive changes and finally terminates in the formation of pus, you almost universally find the symbiotic action, the bacillus of pulp gangrene, and the staphylococcus. In 61 cases in which the bacteriological study was made we found the staphylococcus present in 59 cases. The bacillus of pulp gangrene was present in every case; the spirochaete dentium was present in four cases. A bacillus that was described by Clark in 1879 as a coma bacillus, having somewhat a form like the letter U was present in eleven cases. This organism when inoculated into animals (rabbits and guinea pigs) caused large abscesses in a number of cases; and the animal dies after several months of multiple abscesses. This so-called coma bacillus seems to be quite common in the chronic stages of alveolar abscesses. In one of the sixty-one cases the coma bacillus predominated very much. The bacillus of pulp gangrene was described by Arkövy quite extensively back about in '95. It is one of the organisms that produces extensive putrefactive changes in the pulp of the tooth under anaerobic conditions, and when the pulp is undergoing these changes the organisms are carried into the tissues, sometimes beyond the apical space; and if the staphylococcus or the so-called coma bacilli are present there is an extensive inflammation with necrobiotic changes in a small or large area of bone, depending upon the extent of the infection. It would seem from the bacteriological study that I have made in these cases, when the coma bacillus is the predominating one there is a more or less delayed localization and pus formation; there is also a rise of temperature in the body with an extreme leucocytosis. In many of these cases I am convinced the question of aerobic and anaerobiosis are very largely the determining factor as to the extent of the inflammation.

Streptococcus infection is always to be looked upon rather more seriously, especially in the mouth, than most of the organisms that we find associated with oral infection. There is no question but that the streptococcus infection in some remote parts of the body takes place by its entrance through the oral cavity. Articular rheumatism, for instance, is frequently associated with pyorrhea alveolaris, and I feel justified in saying that I have seen two cases of ulcerated endocarditis that must have been the result of the organisms getting into the blood through the pyorrhea pockets, because in both cases I had previously isolated this organism in its most virulent form from pyorrhea pockets and the streptococcus found in the blood of the patient and the streptococcus found in the pyorrhea pockets, when injected into animals produced identically the same general symptoms. The streptococcus that is usually found in the saliva of the human being is the streptococcus brevis, and is not as virulent a type as the streptococcus longis. One mouth that I was familiar with I isolated from that mouth the streptococcus brevis, and two years later I found none of the brevis forms but all of the longer chain form. The patient, soon after the last findings mentioned, came down with an acute rheumatic condition, from which he has not entirely recovered yet. This will illustrate the importance for the internist to take cognizance of the oral bacteria when they are called upon to treat some of these very obscure forms of infection.

The essayist has emphasized the importance of an early diagnosis, and his familiarity with the clinical aspects as well as the surgical treatment is so logical and so important that his advice on the question is one that should not be overlooked. The essayist has covered so much ground and covered it so thoroughly that it would be quite impossible, as well as useless, for me to comment on that phase of the question. Suffice it to say that the fundamental principle of oral surgery is the understanding of pathology as well as bacteriology. This not only applies to surgical operations, as we now understand them, but it applies to all phases of dental operations. There is one thing that is gratifying to me, after fifteen years of discussing this question of the relative importance of mechanics, bacteriology and pathology, we are seeing some of those who considered time lost in teaching pathology and bacteriology coming out in favor of it, even though it cost two dollars and a half more than it did twelve years ago. When we have a few more papers and a few more capable men to discuss these problems, and convince the general profession that the greatest importance is in the understanding of disease and its etiology and pathology, then the clinical diagnosis and treatments will be more sound, there will be greater satisfaction to the patients, and the dental surgeon will rank above that of the tooth carpenter and the plumber.

Dr. W. H. G. Logan:

There is only one thing I would like to say, and that is that in the extreme cases, if you use a tubular lance and go directly in you will have an opening that is round. Put in your drain, and you will continue to have a drain for many hours. Where you must incise to the bone and before the vaccine can be made, use sodium citrate and sodium chloride 4%, and you will prevent a clot from forming. You will keep the serum of the blood from coming into the opening. Your bacteria will be controlled by nature, and that is the best thing we can do until our remedies are ready.

Dr. C. E. Jones:

Mr. President, I think we are fortunate, as dentists, in that the cases of infection we experience are usually of the staphylococcus variety and not of the virulent form. Most of the bacteria inhabiting the mouth are not virulent, and therefore we are not many times called upon to treat a virulent infection. In an examination of a good many mouths made during the last five or six years it has been almost impossible to find a virulent form of bacteria in the mouth. I believe that the inflammation referred to by the essayist tonight undergoes the virulent form only in the cases he described. I had this impressed on me two years ago in an excessive cystoma that was treated under my observation. It was an impacted lower tooth that had come down from the ramus of the jaw against the second molar diagonally, and as much as a pint of fluid would be secreted in twenty-four hours. There was a great cavity there in the bone encased by an impacted tissue on either side. This failed to show one virulent form of bacteria, although we apparently found everything under the coccus variety. This impressed me that we are not likely to have virulent infection in the mouth, but when we do it is of an extreme nature.

I will feel that I have accomplished something if I can get the essayist or Dr. Rosenow to give some practical way for the average dentist to procure specimens of pus to be examined, so that these men can go away with some practical application of this thing. They may obtain this information in the text books, but it would be very nice if one of the gentlemen will explain how to obtain and preserve this pus that is in the mouth.

Dr. Arthur Black:

In view of what Dr. Jones has just said I do want to call attention to one thing. I think all of the men who have spoken will tell us that streptococcus infections are very much more rare from conditions in the mouth than staphylococcus infections. Therefore, most of the acute infections in the mouth are not very severe. Dr. Rosenow has called attention to those people who die of endocarditis, in which the cause of that endocarditis was traced to conditions in the mouth, either chronic abscess or pyorrhea. I wish all of the members of this society could have attended the Chicago Medical Society a few weeks ago, when Dr. Billings and Dr. Gilmer read papers closely related to this subject. Dr. Billings reported thirty cases, mostly joint infections. In eighteen of these cases joint infections were either removed or cured by the removal of the tonsils. In quite a few of these cases they were not at all certain that there was infection in the tonsil until after the tonsil was removed. In practically all these cases the organisms found were injected into guinea pigs, and they developed the joint conditions. It is not a question whether it is tonsil or alveolar abscess or pyorrhea, but it is a question whether or not there is anywhere in the body a focus of infection of this kind. Are we treating those patients right in leaving these teeth in the mouth? We must cure these cases or extract the teeth.

Dr. Moorehead (closing the discussion).

I personally appreciate Dr. Rosenow's discussion. I would feel honored even if he had made some adverse criticisms. The hour is late and I will occupy but a moment in closing. Dr. Gilmer's position is well taken, that our present attitude toward these fundamental subjects dates back to our student days. The habits of study formed as a college student one usually keeps unless he belongs to an unusual type. The subject most emphasized and best taught in college leaves a more or less abiding impression. The fact that our students are not impressed with the instruction given in pathology and allied subjects accounts for the attitude of the general dental practitioner today. The question is vitally and intensely important. It is too bad that we discriminate between the so-called practical subjects of dentistry and these all important subjects. Such a position means that some of our patients are being neglected. The question of incising these infections is paramount. No one can lay down an arbitrary rule, however, the question must be decided in each case. To repeat, pus must always be evacuated.

I am sure Dr. Jones left a wrong impression, one that he did not really intend to leave. He said there were not many cases of virulent infection. That statement needs qualification. There are two elements to be considered in the premises. First, the effect of an acute virulent infection at the time the infection occurs, both locally and generally. Second, the remote effects of toxines in the so-called chronic infections. The fact that the patient suffers no inconvenience from this latter class does not mean that they are not dangerous. I do not believe we appreciate the absorption area in the mouth and its adnexa. If one were to measure the surface represented by the sockets of all the teeth and then bear in mind that these sockets contain pus and its by-products in so many cases, he would be forcibly impressed with its gravity. A pus focus of the same dimension elsewhere in the body would be looked upon with alarm. As over against the mouth the tonsil has been very much overestimated as a territory through which infections occur, both acute and chronic. If one would apply himself conscientiously and consistently in the interpretation of these mouth infections he must in deed and in truth be a student, and to be a student one must always pay the price. There is no royal pathology.

ST. LOUIS DENTAL SOCIETY, SEPT. 5, 1911.

DISCUSSION OF THE PAPER BY DR. LE GRAND M. COX, ON "RATIONAL TREATMENT IN DISEASES OF THE MAXILLARY SINUS."

Dr. A. T. Gast:

There is not a great deal that I can add to what Dr. Cox has said in reference to diseases of the maxillary sinus, except it be to emphasize the importance of recognizing pathological conditions when they exist as early as possible. On account of the varying character of the symptoms and often the total absence of any local symptoms, in the earlier stages, I think, many cases are not diagnosed until considerable harm has been done both locally and generally. In many cases, an elevation of the temperature, nervousness, anorexia and other general disturbances exist for a considerable length of time before there are any local manifestations of antral disease. So in doubtful cases, I think it is far better to make an early positive diagnosis, either by tapping the antrum as outlined by

Dr. Cox or by making the examination through the nose, than it is to extract teeth to find out or to wait until pronounced symptoms develop.

During the last year three cases have come under my observation which may serve to emphasize the importance of diagnosing these cases in the earlier stages.

The first case was that of a woman thirty-four years of age. She complained of a left upper first molar that had been filled five years previously, being sore. The filling was removed and the pulp was found to be in a gangrenous condition. The tooth was treated and she was advised to return the next day. When she returned the tooth was extremely sore, and she complained of intense pain and a sense of fullness in the region of the antrum. Upon further inquiry she informed me that she had suffered for nearly a year from a dull, heavy neuralgia in that side of the face, general nervousness, a slight daily elevation of the temperature and anorexia, and that she had been treated for these conditions without relief. Antral inflammation was suspected and extraction of the tooth was advised, as the pain and inflammation could not be controlled by any other means. Her physician did not fully agree with me as to the presence of antral trouble, because of an absence of pus in the nose, but suggested consulting a rhinologist. This was done, the antrum was punctured from within the nose, revealing a condition of chronic suppuration. After treatment was begun there was a rapid improvement of the patient's general health; all of the symptoms she complained of entirely disappearing, as well as the neuralgia in that side of face.

The second case, a woman thirty-five years of age, consulted me in regard to a fistula that opened above the roots of a left upper first molar. She also said that she had been ailing for nearly a year, and that she had been advised by her physician to have her teeth treated. Upon examination the crowns of the bicuspids and molars were found to be entirely decayed away, leaving only the roots teeth, showing the presence of necrosed bone. Extraction was advised and the roots were removed. The extraction of the first bicuspid was followed by a profuse discharge of heavy pus from the alveolus. A probe was passed through the alveolus into the antrum which was found to be exceedingly large and fairly engorged with pus. From the appearance of the antrum, it must have been in a diseased condition for two years, though during all of that time there was no pain whatever, only a very slight heaviness on that side of the face, all of the symptoms were of a constitutional nature. These symptoms entirely disappeared after treatment was begun.

The third case, a young lady twenty-six years of age, was advised to consult a dentist to find whether the teeth were not the cause of a dull heavy neuralgia in the left side, from which she had suffered for several months. The teeth and gums were examined and found to be perfectly healthy, with the exception of the molars which were somewhat sore, the third molar being more sore than the others and slightly impacted. Thinking that it might be the cause of the trouble it was extracted. This, however, did not afford any relief but seemed to make matters worse, for the next day the glands in the neck on that side were greatly swollen, it was very painful to open and close the jaws, there was a high fever and considerable pain. Inflammation of the antrum was suspected, due to infection through the nose. A rhinologist was called, who confirmed the diagnosis. The case, being of nasal origin, was treated through the nose. The neuralgia ceased as soon as the pus was evacuated and has not returned since.

Dr. W. O. Campbell:

The essayist has handled the subject so thoroughly that there is little to discuss. One sentence appealed to me, "after the diagnosis is established, the question of treatment arises." I hope you get that sentence fixed in your mind. The question of treatment arises after the diagnosis is established. How many of us wait long enough to establish our diagnosis before beginning treatment. I knew a fellow who drilled out several gold fillings in an attempt to relieve a pain and afterward established his diagnosis—pyorrhea. We must eradicate that method of treatment. It may sometimes be palliative but never curative. You must establish your diagnosis before you are in a position to cure.

About a year ago I put an inlay in a lower second molar. A few weeks later the man returned and called my attention to a swelling at about the location of the submaxillary gland on the left side. Thermal tests indicated a live pulp in the molar but I decided to take no chances, so removed the inlay and filled it with cement. At a subsequent visit the swelling was found to be larger but there was no inflammation and as the tooth was in prime condition the possibility of the tooth being the cause of the trouble was eliminated. A surgeon was consulted and he discovered that the maxillary gland was involved. The knife was suggested but as the patient was not suffering we decided to establish the diagnosis first. I read up on cancers, tumors, cysts and glands and bothered every dentist I came in contact with by reciting the case to him and asking his opinion as to a possible cause. Dr. T. E. Turner, after hearing me, wanted to know if I had thought of ranula. The next morning I had my patient call, and placing my finger on the franum lingua I let it slip back over the tract of Wharton's duct toward the submaxillary gland. About midway I felt a hard substance about the size of a pea, and thanks to Dr. Turner the diagnosis was established, the cure simple.

Dr. Cox has said something that every dentist should have pinned in his hat: "After the diagnosis is established, the question of treatment arises."

Dr. Cox (closing).

In closing, I wish to thank the gentlemen who have taken part in the discussion. Dr. Gast spoke of passing a probe through the ostium maxillare for exploring the antrum. A few claim that this can be done, while others, among them Dr. M. H. Cryer, say that this is impossible on account of the anatomical location of the opening. It seems to me that it would be very difficult and only possible in rare instances. If one wishes to puncture the antrum for diagnostic purposes there is no objection of passing a trocar through the buccal process or inferior meatus—either one of these points would be more accessible.

Dr. Campbell mentions the importance of early diagnosis, which I think is the most important duty of the dentist and physician. To be able to recognize pathological lesions in the early stages, and to differentiate between diseases of the oral cavity. Where systemic disease is the underlying cause or is present in oral diseases, the general treatment in connection with the local is imperative.

Dr. Turner calls attention to the use of the drainage tubes and plugs for maintaining an opening through the alveolus while treating the antrum. These were used a great deal, but are seldom employed now on account of the irritation they produce to the soft tissue. If I have an opening through the alveolus I allow it to close remaining. Further examination revealed a dark bluish area of gum tissue with a clear line of demarkation around the roots of these and make the semi-circular opening as described before; it can be made larger, which facilitates a visual examination. The cheek falls over the opening, preventing foreign material from entering the cavity. Dr. Turner reports a case of a growth springing from the alveolus which is interesting from our standpoint, as these are occasionally found in this locality and may be found springing from a wall of the antrum. I had a case of this kind sent to me a few months ago where an antrum had been treated for some time through a small opening. I made a larger opening for an examination and found suspicious looking tissue on the inner wall of the antrum; clipping off a small piece, I had it examined by a pathologist and it proved to be a small celled sarcoma.

In chronic antrum cases, where there is some complication with considerable necrotic tissue, and the constant accumulation of purulent secretions it is better to obliterate the antrum. Healthy granulation filling in and fibrosis taking place in the ostium maxillare there is little deformity and no perceptible defect in the speech.

In conclusion, I wish to say that a thorough knowledge of the internal anatomy of the face is necessary for the successful treatment of these cases and early diagnosis of antral diseases is of prime importance. In cases of dental origin the buccal wall route has the advantage for digital and ocular examination and easy access for curettement, and it establishes drainage at the lowest point of the sinus. I thank you.

THE AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT DRESDEN, JULY, 1911.

DISCUSSION OF DR. KELSEY'S PAPER, "TIN CROWNS AND INLAYS."

Dr. H. W. C. Bödecker

said the paper was of interest to him from the fact that he, too, believed the inlay was of such importance that there was need of a second class inlay. In school children's clinics and some of the smaller practices, and in infirmaries and hospitals, gold restorations were not always possible. It was a well-known fact that a great many teeth could be preserved by inlays, and it was not always possible to use gold owing to the financial conditions of the patient, and it was just in those cases that tin would be of very great service. Years ago he had the same idea and evolved the so-called amalgam inlay. He was asked at the time why he should not make an amalgam filling, as it was simpler, but the very fact that between the amalgam and the dentin there was a uniform layer of cement made the method far superior to the combined filling made with soft cement and soft amalgam. The layer was more uniform and larger restorations could be made with the inlay than with soft amalgam. For that reason he recommended amalgam inlays. It was, however, not always practicable, and the tin inlay suggested by Dr. Kelsey was far superior.

Dr. O. Solbrig (Paris)

agreed with Dr. Bödecker as to the value of tin in large polyclinics, especially for the use of students. In Paris the College Clinics were not permitted to take patients who were sufficiently well off to pay for gold inlays, and therefore the patients were drawn from the poorer classes and the State would only pay for cheap material. Consequently, the student had no chance of practicing with gold inlays, bridges, etc., his only opportunity being to work on a fellow student and make him pay for it. Tin would be a material welcomed by the students. But Dr. Kelsey had advocated the advantages of tin for private work, and certainly it had great advantages as a filling material, especially in central cavities, on account of its malleability and adaptation to the tooth structure, and it preserved the tooth almost better than anything else. In cavities where there were four walls to keep the tin in it was no doubt of benefit, but where there were only small retentions the tin might, under the stress of mastication, be pulled out. For crowns it was necessary to be careful to make a skeleton between the pivot and the pin in the tooth, and they should be soldered together. The pins of the tooth were easily pulled out after the thing had been worn in the mouth for some time. With regard to tin bridges, he doubted very much whether they would stand the stress of mastication. If tin was recommended on account of its color there might be differences of opinion. Gold was very conspicuous, indeed, but it had a cleanly appearance and when a tooth was observed to be filled with gold one saw at once that care was being taken with the teeth. The tin filling between two teeth had a dirty look. The question of expense should not come into private practice. The difference between gold and tin in even the biggest molar, the largest proximal occlusal filling, was not more than three marks. In preparing a cavity for tin, the same precautions had to be taken and the same procedure adopted as in preparing it for gold, and therefore the total saving of three marks was not by any means in favor of the tin. Gold had certain advantages, and was not to be ousted by tin on the question of expense.

Dr. N. S. Jenkins

said there was one advantage in a tin inlay to which Dr. Solbrig had not referred. It was by no means uncommon to find patients whose mouths were filled with a large number of gold inlays bitterly complaining of the shock to the vital teeth by extremities of heat and cold, particularly cold. In most circumstances the teeth should be filled with porcelain, but if there were cases where teeth were enormously sensitive to extreme temperatures, and a metal inlay was advisable, tin would have the advantage of being far less trying in such cases than gold, as it was not such a good conductor.

Dr. Solbrig

said that if a gold inlay were used it need not necessarily be a solid one, but a tin inlay was bound to be solid. Gold inlays could be hollowed out to such an extent that if filled up with cement they had the advantage of a non-conducting material for sensitive teeth, with all the benefit of the gold inlay.

Dr. S. Snow-Smith (London)

said one little point with regard to the use of metal in the mouth was sometimes overlooked, and that was that some ladies, by religious conviction, were against having gold or any other metal in their teeth.

Dr. Kelsey,

in reply, thought what Dr. Bödecker had said was very true, although he had avoided the question of expense. As Dr. Solbrig said, the expense was not particularly great for a gold filling, but it was great in the minds of some patients. It was easier to say to the patient that the tin inlay was quite as good, and would cost about half as much. With regard to the difficulty of adjusting the tin accurately to a cavity, he thought the samples he had shown gave no evidence whatever of the presence of cement. The inlay could be burnished much more closely down than gold. As to the tin pulling out, he could scarcely see the possibility of it. On the question of durability, tin was not a new material, and was considered quite a durable material, and it seemed to him that a cast filling was much more dense than a filling made by pressure, and ought, consequently, to be more durable. Of course, if it was useful in teaching young men how to make inlays, the object of the paper would not be entirely lost.

DISCUSSION OF THE LECTURE BY DR. WM. BEBB ON "EXPERIENCES OF A DENTIST IN THE STUDY OF COMPARATIVE ANATOMY."

Dr. C. F. Bödecker

said he was sure the members were deeply indebted to Professor Bebb for the really wonderful talk he had given, and the beautiful pictures he had shown. The work of collecting the specimens and of preparing them must have been enormous. With regard to the question of studying comparative dental anatomy in the Universities, that was a subject that should be discussed much more in the United States, as it had a great bearing upon the treatment of the teeth, and also upon the breadth of education. Everything that broadened the education of the dentist was of value. With reference to the point that clean teeth did decay, he thought that was an undisputed fact: Everyone knew of patients who kept their teeth faultlessly clean and yet suffered from caries. He himself thought the main cause of caries was to be found in malnutrition. At one time caries seemed to progress with lightning rapidity, and the dentist saw his work fail on every side; then after three or four months the patient recovered from some constitutional ailment and the decay ceased. Captivity in animals was undoubtedly a cause of improper nutrition, especially, probably, due to the fact that the animals did not get sufficient exercise. Civilized man really was in captivity; he did not get sufficient exercise, and consequently malnutrition followed. It used to be thought that the kind of food eaten was the cause of malnutrition, and he himself had told patients that nowadays people did not chew the hard bread they used to, and therefore did not give sufficient masticatory exercise to the teeth, which produced circulation and therefore nutrition. But he now believed that the mastication of hard foods was simply good as a cleansing agent, and had not so much to do with the preservation of the teeth as was commonly thought.

Dr. S. Snow-Smith (London)

said he had had a field spaniel which he bought from a farmer in Essex, England. The animal was not being properly treated by the farmer, as she was kept in captivity and fed on the by-products of brewing, malt and hops. The dog's teeth were in a very bad state, owing to the chemical changes produced in the mouth by the fermented material upon which it was fed.

Dr. C. N. Smith

asked Professor Bebb whether, in his work amongst wild animals, he had found any evidence of the infection of the jaws from actinomycosis, and whether he had looked particularly for that condition in the teeth of the deer.

Dr. H. H. Bethel (Wiesbaden)

said he had a little lap dog badly affected with pyorrhea alveolaris and after a certain length of time the animal developed disease of the stomach and became very ill indeed. A little scaling instrument was used to remove the tartar of the teeth, and the teeth tightened up and the dog's stomach has been much easier since.

Professor Bebb, in reply,

said with regard to actinomycosis, the specimens he had taken in their native habitat had been largely confined to areas far removed from cattle and men. Actinomycosis was quite common amongst the cattle and human beings of the valley in which he lived. but he had yet to find a single specimen in any of the captive animals. He did not think the specimens of deer he had shown were suffering from actinomycosis, or "lumpy jaw," as they called it in his country.

DISCUSSION OF THE REPORT OF DR. BÖDECKER ON "SOME RECENT INVESTIGATIONS UPON THE HISTOLOGY OF THE DENTIN."

Dr. Kirk

said he had been very much interested in Dr. Bödecker's paper, for the reason that it raised a point which he thought it was very important should be considered. In the first place he wished to call attention to the statement of the essayist that the sheathes of Neumann and Römer were not demonstrable except in decalcified specimens. That raised a finger of warning with respect to the interpretation of the appearances. He did not mean to imply definitely that the sheathes of Neumann might be absent, so to speak, but the interpretation of their nature might be modified very considerably by the method of preparation of the specimen. As early as 1856 a series of very important papers with reference to the chemical composition of dentin and of various calcified structures throughout the animal organism were published, first by Rainey of London, and secondly by Mr. Ord, who took up the line of research and applied it to certain other animal material, and by Professor Hartig. It was the researches of Rainey and Ord that directed attention to the chemical substances of the material which formed the basic substance of the dentin as well as the enamel. It was one of those gentlemen, he could not remember which, who drew attention to the fact that the so-called calcaglobulin, which might be called the chemical material out of which the calcified structures were made, had a definite chemical compound. It consisted of an albuminous or colloidal material, like globulin, with lime salt, and it appeared to be in definite proportion, depending upon the nature of the organic material which was combined with the lime. It was shown that in the decalcification of shells, for example, or calcified structures, there was a certain point to which the decalcification could be carried, and after that there was left a cartilaginous residue which did not seem lime, but which was not further acted upon. It was that material which was stainable by reagents. In going over the material roughly he had the feeling that the sheath of Neumann was not necessarily a separate structure, but represented the same structure more densely calcified, and the decalcification process necessary to staining left only a portion of the calcium salts to be rendered visible by the staining process. There was a great danger in making generalizations about such things until the whole story was known. The process of decalcification would have a very definite effect upon the nature of the result, whether that decalcification was done by an acid which had a coagulating effect upon the albuminous residue, or by an acid which had no such effect, as, for example, lactic acid, which had no coagulative effect on the cartilaginous remainder. If sulphuric acid or hydrochloric acid was used different results were obtained. That would help to account for the difference in appearance between a specimen decalcified with hydrochloric acid as compared with one naturally decalcified by the lactic acid of caries. He suggested that a solution of the problem would be reached by strictly optical methods in ground sections, rather than in sections chemically prepared and stained. The staining method and decalcification method were perhaps the best that could be used in the present day, but he hoped that some method, perhaps by photography or polarized rays, would be able to differentiate more precisely, without disturbing the specimen, the existence or the non-existence of the actual sheath of Neumann. He had called attention some years ago in a paper on the study of dentin by means of polarized light to the difference in transparency of calcified tissues, and he enunciated what he believed to be a natural law, that the transparency of calcified tissue was in direct proportion to its percentage of lime salts. Under the polariscope it was possible to differentiate dentin from enamel, and those two tissues from cementum, thus discovering the chemical nature of pulp nodules by reason of the fact that the difference of calcification made a difference in the polarized light. Dr. Bödecker had suggested to him that a diagnosis of early decay might be made by means of the Röntgen rays. It was the same idea as observing the transparency of tissue by the use of the polarized rays. He hoped by that method some information would be obtained towards solving the problem, towards attaining a solution more precise and accurate than that which could be obtained by the chemical method, which altered the tissue and often led to erroneous conclusions.

Dr. F. F. Robinson (Paris)

asked whether the old measurement of the canalicula, which was 1/3,200 of an inch in diameter, had been maintained or destroyed. Further, had the old theory of the sheath and its contents, and the dentin being nothing more than bioplasm in different stages of calcification, been exploded.

Dr. C. F. Bödecker, in reply.

thanked Dr. Kirk for his contribution to the discussion. It was true that the sheath of Neumann was not visible in calcified specimens, and could not be stained, but that might be explained by the fact that the lime salts so thoroughly enclosed the structure that it was impossible for staining reagents to reach it. It was true that lactic acid had the least coagulating effect on organic structures, but all acids had a more or less coagulating effect. Some acids caused organic structures to shrink, while others expanded them. He frequently used chemicals to counterbalance that effect. With regard to examining the structures of calcified specimens in comparison with examining the decalcified specimens, there was no doubt that the nearer one could get to examining the tissues as they were found in the body, without submitting them to the reaction of chemicals, the better would be the results. But enamel and dentin were the most difficult structures to examine, and it was impossible to make thin sections with calcified tissue. A ground section of dentin or enamel, .01 millimetre, would be considered a pretty good section, but with his method of decalcifying he had managed to get .002 millimetre. Polarized light undoubtedly aided the study of calcified structures, and the dark field illumination would also give some new results, and he was working upon that matter now.

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EDITORIAL.

A FUND FOR AGED DENTISTS.

On another page will be found the copy of a letter to be sent to each of our State Societies appealing to the officers to so amend the by-laws as to create a fund for the support of aged and disabled dentists who are not financially able to care for themselves. We commend this letter to the careful reading of every member of the profession. Dr. Noel of Nashville, who has given the matter much thought and who is chairman of the committee of the National Dental Association having this matter in hand, will be glad to go fully into the details of the plan for any one who wishes further information before the meetings of the various state societies. It is strongly urged that our societies take this question up and carry it to a successful issue. There can be no doubt of the need of some plan whereby provision can be made for worthy members of the profession who have in any way become incapacitated for work, and who have not been able to save enough to support themselves in their old age. When we consider how easily a dentist may be thrown out of his earning ability it is a sad commentary on the far-sightedness of our profession that no such movement has been started before.

We have all been too frequently confronted with the spectacle of dentists, some of them of national and international reputation, being thrown on the personal charity of friends to eke out a miserable existence under the humiliation of accepting alms, when, with a fund provided by such a plan as outlined by Dr. Noel, there would be ample resources to look after these cases and not the same sense of humiliation in accepting the aid offered. The letter of the committee goes into the matter in considerable detail and we bespeak for it a careful reading.

DR. TAGGART WINS HIS SUIT.

Just as we go to press we receive word that the suit of Dr. W. H. Taggart against Dr. George W. Boynton of Washington, D. C., has been decided in Dr. Taggart's favor. The following copy of the decree will show the explicit ruling of the court, and must suffice at present for further comment on the case. It has been a long drawn out contest entailing a severe strain on those interested, and it will be a relief to all concerned to have it decided:

In the Supreme Court of the District of Columbia. William H. Taggart vs. George W. Boynton. In Equity, No. 27927.

DECREE.

This cause having come on to be heard on the pleadings and proofs, and the court having heard the argument of Russell Wiles, Esq., and Francis M. Phelps, Esq., on behalf of the plaintiff, and of E. T. Fenwick, Esq., on behalf of the defendant and being fully advised in the premises, finds as follows:

1. William H. Taggart, the plaintiff herein, is the owner of Letters Patent of the United States, No. 872,978, for a method for making molds for dental inlays and the like.

2. Said Taggart was the first, sole and original inventor of said method and said method involves patentable invention over the prior art. It was not known or used by others before plaintiff's invention thereof or more than two years prior to Jan. 12, 1907, and the defenses of prior knowledge and use, and of public use more than two years before the filing of the application are not established and are overruled.

3. Letters Patent of the United States, No. 872,978, are therefore good and valid in law as to each claim thereof.

4. Defendant, Dr. Geo. W. Boynton, has infringed said patent by practicing the process thereof in the District of Columbia since the grant of the patent and prior to the filing of the bill herein.

5. Plaintiff has not prayed for damages in his bill and has limited his prayer to that for an injunction and general relief.

It is therefore ordered, adjudged and decreed that defendant, George W. Boynton, his agents, servants, attorneys and workmen be and hereby are enjoined from further infringing said patent and from further practicing the method thereof, and that a writ of injunction to this effect issue out of this court.

Further ordered that defendant pay the costs of this suit to be taxed by the clerk and plaintiff have execution therefor.

Harry M. Clabaugh,
Chief Justice.

Approved as to form,
Francis M. Phelps,
Dyrenforth, Lee, Chritton & Wiles,
of Counsel for Plaintiff.
Edward T. Fenwick,
of Counsel for Defendant.

BOOK REVIEWS.

Educational Lectures on Dental and Oral Hygiene. Edited by Dr. T. C. Trigger, Licentiate of the Royal College of Dental Surgeons of Ontario, Canada. The Journal Press, St. Thomas, Ontario, 1912.

This is a little volume of 64 pages dealing with a subject which is just now very much in evidence. In addition to what Dr. Trigger has written on the subject himself he has selected from the writings of others much significant material and brought it together in this book. The result is a volume containing useful information for the public well calculated to lend aid to the important campaign which is now being carried on for the betterment of humanity in the way of oral hygiene.

A Text-Book of Dental Histology and Embryology, Including Laboratory Directions. By Frederick B. Noyes, B. A., D. D. S., Professor of Histology, Northwestern University Dental School, Chicago. 12mo., 510 pages, with 350 illustrations and 19 plates. Cloth, $4.50, net. Lea & Febiger, Philadelphia and New York, 1912.

There could not in the dental profession have been selected a man more capable of writing such a book than Dr. Noyes. A somewhat careful examination of the volume leaves the impression that Dr. Noyes has taken the subject from the atmosphere of dry detail so prevalent in former works and raised it to the status of an interesting and coherent treatment of the subject as it relates to our every-day work in the office. He has traced most intimately the relationship of the histological structures of the teeth to the practical operations on these organs, and he illustrates all his points with the most effective photographs and drawings. Whether or not histology has any particular attraction for a man we challenge the ability of any one to examine this book without being impressed with the beauty of the subject. The author has made it most attractive, and the publisher has carried out his ideas in a most commendable manner.

PRACTICAL HINTS.

Edited by J. E. Schaeffer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, The Dental Review, 55 State Street, Chicago, Ill.)

Non-Oxydizable Gold:—"Non-oxydizable" 22 k. gold plate makes a better inlay and looks like pure gold, and is a great convenience in other work. Ask your dealer for it.—*M. R. Harned, D. D. S., Rockford, Ill.*

A Serviceable Washer:—The next time you need a washer for your syringe, cut one out of 20-gauge sheet lead, and you will have no more trouble from that source.—*V. B. Newell, Stafford, Kansas.*

Wax Your Mechanical Saws:—A little wax rubbed along the teeth of the mechanical saw that you use to cut off sprues with will make the saws run smoothly and cut in a truly astonishing manner.—*Arthur G. Smith, D. M. D., Peoria, Ill.*

A Practical Suggestion:—In mending a broken arm—no surgeon would expect a cure without giving the injured member rest. Don't forget this important fact when you handle your next diseased tooth, be it from pyorrhea or any other cause.—*A. E. DeRiemer, D. D. S., Chicago, Ill.*

Root Amputation:—The amputation and extraction of the palatal root of an upper molar (in that large number of cases where this root is the only one affected by pyorrhea) is not a difficult operation, and will sometimes extend the usefulness and comfort of the tooth so operated on for a number of years. Needless to say the root canals of all teeth which are to be so operated upon should be carefully filled before the amputation.—*Arthur G. Smith, D. M. D., Peoria, Ill.*

A Dentist's Duty:—It is the duty of every dentist to relieve pain and not to cause it. Every woman who finds herself pregnant should visit her dentist, tell him her condition and place herself in his hands to do whatever work he finds necessary to be done. We should take special care to avoid giving her pain at such a time, not because it would be hazardous, but for the necessity of not shocking her nerves any more than possible on account of pre-natal impressions as aforesaid.—*J. C. Winters, D. D. S., Kankakee, Ill.*

Replacing a Tooth in a Vulcanite Denture:—If a plate has a fair amount of rubber, select a tooth, dovetail a space, making undercuts as for a filling, put the tooth in position, and hold it with the left hand. Heat a wax spatula over a bunsen and with some low fusing alloy (that will melt in boiling water and is used for dies) melt some alloy off and with a pointed hot spatula force it into the cavity—polish at once. I have had repairs made in this way hold for two years that I know of and probably longer. They will hold if the vulcanite is of sufficient thickness and with a little experience can be done quicker than it has taken me to write this article.—*G. H. Henderson, L. D. S., D. D. S., Springfield, Ill.*

Continuous Gum Work:—In the construction of this, the only perfect ideal denture, one thing is often largely overlooked, and that is that its strength is mainly in the metal foundations. While porcelain adds to its strength, that cannot be depended upon to resist the strain across the anterior half of the jaw.

The reinforcement of the posterior margin cuts but little figure. In the simple soldering of the pins to the plate, even though they be enclosed in tubes, leaves the weakness of the spaces between the teeth.

There should always be a continuous backing with foot piece ⅛-inch wide, under which the thin gold is laid. This is made in three pieces, one covering the anterior, the others the posterior teeth, lapped over the cuspid. These pieces shaped from sheet lead patterns.

I have found, in the pains which I have taken in the construction of this work, that it is the strongest work made and that after sixty years' experience in its use—my license from John Allen, dated November, 1851.—*L. P. Haskell, Chicago, Ill.*

A Smooth Gutta Percha Filling:—In making a permanent filling a quantity of warm gutta percha sufficient to fill the cavity is dipped into validol (validol camphoratum is a colorless, oily fluid, whose chief ingredients are valerian, menthol and camphor) and firmly pressed into the cavity with a broad instrument. With a warm burnisher, previously dipped into validol, the surface of the filling is made smooth. If the amount of gutta percha introduced is not sufficient more may easily be added in the same manner. The excess can be cleanly cut off with a hot spatula. In trimming a filling the instrument should be heated, then dipped into validol and after use be thoroughly cleaned before being heated again. Fillings made in this way are always smooth, as the gutta percha, no matter how often it has been folded during introduction or smoothing, always unites again, thus making a perfectly homogeneous mass. This obviates the inconvenience to the patient often caused by the roughness of ordinary gutta percha fillings.—*H. W. C. Bödecker, D. D. S., M. D., Berlin, Germany.*

Occlusion Plus Articulation, No. 9:—Little overlap should be given the anterior teeth as a decided overbite would necessitate a greater inclination of the molars and a deeping of their sulci; this would increase the leverage formed by the interlocking of the cusps and would have a tendency to unseat the dentures during mastication.

Having completed the arrangement of the teeth, the case is now tested to observe whether proper articulation has been obtained. By articulation is meant, the contact existing between the upper and lower teeth when the mandible occupies any other location than the position of rest. When the mandible is in the latter position, teeth are said to be in occlusion. The lower model is protruded bringing the buccal and lingual cusps of the lower teeth in alignment with the corresponding cusps of the upper teeth and the anterior teeth in an end to end position.

In the lateral movements one condyle becomes a pivot or rotation center while the condyle on the opposite side moves forward in its path. During this movement the teeth on the pivotal side are in contact from the median line to the last molar. On the opposite side, we have contact of the teeth usually at but one point, this falling as a rule on the mesio-lingual cusp of the last upper molar with the disto-buccal cusp of the lower last molar. This latter point forms the balancing contact and prevents the dentures from tipping during mastication.—*J. E. S.*

MEMORANDA.

ILLINOIS STATE DENTAL SOCIETY.

The Forty-Eighth Annual Meeting of the Illinois State Dental Society will be held at Springfield, May 14, 15, 16, 17, 1912. A. E. Converse, Chairman Local Arrangements Committee. J. F. F. Waltz, Secretary, Decatur.

AMERICAN DENTAL SOCIETY OF EUROPE.

The Thirty-Ninth Annual Meeting of the American Dental Society of Europe, will be held at the Palace Hotel in Brussels, April 5, 6 and 8. An interesting programme will be furnished, and a cordial invitation is extended to members of the profession to be present. Geo. H. Watson, Hon. Secretary, Pariser Platz 7, Berlin, Germany.

NORTH DAKOTA DENTAL ASSOCIATION.

The seventh annual meeting of the North Dakota Dental Association will be held at Grand Forks May 14 and 15th, 1912. E. N. Hegge, Secretary.

KENTUCKY STATE DENTAL ASSOCIATION.

The next meeting of the Kentucky State Dental Association will be held in Louisville May 27, 28 and 29, 1912. A special attraction of talented men from out of the state will be upon the program this year and every indication points to the best state meeting that has been held for many years. The dentists in Kentucky are especially invited and a cordial invitation is extended to all ethical members of the profession. W. M. Randall, Secretary, Louisville.

MINNEAPOLIS DENTAL SOCIETY.

The Minneapolis Dental Society will have a two-day meeting March 22nd and 23rd. The program for the first day will be extensive chair and table clinics and a lantern slide lecture in the evening. The second day's program will be devoted entirely to clinics by professional talent from out of the city. An extensive manufacturers' exhibit will be held in the same hall on both days. Any further information regarding this meeting may be obtained from O. DeForest Davis, Secretary.

THE TEXAS STATE DENTAL ASSOCIATION.

The thirty-second annual meeting of the Texas State Dental Association will be held at Abilene, Texas, May 2, 3 and 4, 1912. Exhibitors desiring space will please address Dr. C. M. McCauley, Abilene, Texas. The clinics will be in charge of Dr. J. O. Hall, Waco, Texas, who will furnish any information relative to same. All ethical practitioners are cordially invited to attend the meeting, and will be cheerfully furnished any other information by the secretary. H. M. Davison, President, Hubbard, Texas. J. G. Fife, Secretary, 736 Wilson Bldg., Dallas, Texas.

MINNESOTA STATE DENTAL ASSOCIATION.

The twenty-ninth annual meeting of our Minnesota State Dental Association, which will be held in St. Paul, Minn., June 14-15, 1912, promises to be the largest in the history of the organization. The large clinic and manufacturers' exhibit will occupy the entire top floor of the new Lowry Building, the largest and best equipped dental and medical building in the west. At this time of the year the Twin Cities, with their wealth of parks and beautiful lakes, afford an ideal spot for vacation and the business and instruction combined with the recreation so necessary to our profession. For information address Benjamin Sandy, Secretary, 636 Syndicate Building, Minneapolis, Minn.

OKLAHOMA STATE DENTAL ASSOCIATION.

The meeting of the Oklahoma State Dental Association will be held March 25th to 30th, at Oklahoma City. Please note the new feature of a post graduate course, given by Drs. Buckley, Goslee & Dittmar, of Chicago. All members in good standing are eligible to take the course, which is $5.00. This includes dues for one year and diploma. All ethical dentists outside of the state can take the course for $10.00. We expect a large exhibit and extend a special invitation to all ethical dentists in the U. S. A. For any information address the following: C. R. Lawrence, President, Enid, Okla.; A. L. Walters, Secretary, Checotah, Okla.; B. L. Shobe, Chairman Post Graduate Committee, Bartlesville, Okla.; R. S. Parsons, Chairman Program Committee, Oklahoma City, Okla.; E. S. Gum, Supervisor of Clinics, Oklahoma City, Okla.

INDIANA STATE DENTAL ASSOCIATION.

The Indiana State Dental association will hold its Fifty-fourth annual meeting at Indianapolis, May 21, 22, 23, 1912, at the Claypool Hotel. W. W. Shryock, Supervisor of Clinics, promises the greatest clinic ever held in the state. W. E. Kennedy, Executive Committeeman, has already perfected a grand program, having secured the promise of papers from some of the best men in the dental profession. Carl Lucas, master of exhibitors, has already almost the entire eighth floor of the Claypool Hotel reserved by the dental exhibitors. The meeting will go down in the history of the association as a future "land mark" because of the large number of new members—Our slogan, "1,000 new members in 1912." No dentist or exhibitor who wants to attend one of the very best meetings that will be held in 1912 can afford to miss the Indiana State Dental Meeting this year. You will be welcome. Otto U. King, Secretary, Huntington, Ind.

RECENT PATENTS OF INTEREST TO DENTISTS.

1,004,185. Inlay casting machine, Frederick H. Nies, New York, N. Y.
1,004,302. Backing for artificial teeth, Roscoe B. Power, Green Bay, Wis.

1,004,118. Dental tool, Thomas S. Waters, Baltimore, Md.

1,005,006. Machine for making tooth pin anchors, James Dimelow, York, Pa.

1,004,933. Server for toothpicks or article of similar splint-like form, Louis H. Tangen, Duluth, Minn.

1,005,131. Dental tooth regulating appliance, Edward H. Angle, New London, Conn., and J. L. Young, New Rochelle, N. Y.

1,005,773. Ingot mold, Evan Evans, Port Talbot, England.

1,005,296. Dental suction plate, Jacob Petry, Pittsburgh, Pa.

1,005,468. Moistener for dental tools, George G. Reed, Holyoke, Mass.

1,005,365. Artificial tooth, George W. Todd, Omaha, Neb.

1,005,985. Combined tooth brush and paste tube holder, Harry J. Lebherz, Frederick, Md.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

MINNESOTA STATE DENTAL ASSOCIATION.

On December 11, 1911, occurred the death of Dr. J. C. Corcoran, one of the foremost men of our profession in the state. He was born in 1863 in Corcoran, Minn., a town named after his father, graduated from the Ohio State Dental College, with honor in 1886 and has been since considered one of our best operators. His loss is felt keenly by the profession and the following resolutions have been drawn up by the Minnesota State Dental Association, in appreciation of him.

"In Memorian" Resolutions.

Whereas, It has pleased Almightv God in His Providence to remove from our midst and from this earth our esteemed brother Dr. J. C. Corcoran who departed this life December 11, 1911, and

Whereas, By his death the commonwealth has lost a citizen of the highest type and the profession an eminent and highly respected member, who, throughout his career, was among the foremost working for the advancement of his fellow man, and

Whereas, By his death the Minnesota State Dental Association has sustained an irreparable loss; therefore be it

Resolved, That we, the Minnesota State Dental Association, feeling the loss we have sustained keenly, hereby express our sorrow over the sudden culmination of Dr. J. C. Corcoran's noble career, and be it further

Resolved, That a copy of these resolutions be spread upon the minutes of this association and a copy be sent to the bereaved family and to the Journals for publication. F. J. Yerke, G. F. Andrews, J. M. Walls, Committee.

NATIONAL RELIEF FUND.

To the ——— State Dental Association,

Dear Sirs: Your Society will doubtless vote to come into the National Dental Association in accordance with the plan of the American Medical Association as adopted by the National Dental Association at Cleveland last summer.

In doing this, it will probably be necessary for you to alter your constitution and by-laws. This is an appeal to you to seize the opportunity to provide for another good cause at the same time. The National Dental Association is endeavoring to establish a fund for the benefit of its aged and disabled members, and at the last annual meeting a committee was appointed to take charge of this work.

To make clear to you the plan upon which we wish to proceed, we quote from the paper presented to the National Dental Association, which was adopted and in accordance with which a committee was selected.

Plan:—"Let each State society increase its annual dues one dollar for each member, and let the additional one dollar thus obtained be turned over to a committee to be known as the relief committee. This committee should consist of three members to be elected by ballot, the senior member to serve three years, the junior members to serve one and two years respectively, so that at each annual meeting there will be one place to fill on this commitrtee.

"It shall be the duty of this committee to take care of the relief fund, to solicit subscriptions to it, whenever and wherever—in their judgment—they are likely to be obtained, to receive any donations or legacies that may come to their care, and to report to the National committee any cases of distress among our members that in their judgment deserve our attention, turning over annually to the National committee the money collected during the year."

This plan, if adopted by all the State societies, should, when all are working in unison, produce twenty or thirty thousand dollars per annum, from the one dollar per member alone, to say nothing of donations, voluntary contributions, etc.

This plan was put before the Tennessee and Kentucky societies before it was acted upon by the National Dental Association, and was adopted by them. Several other Southern states at their annual meetings in 1911 agreed to adopt it, provided it was endorsed by the National Dental Association.

The National Committee is receiving the most encouraging letters from dentists all over the country, who are enthusiastic for this movement.

While making the necessary changes in your constitution, in order to come into the newly-organized National Dental Association, we beg you provide for the increase of your dues the small sum of one dollar per member for the benefit of the unfortunate. We cannot believe that you have one member with soul so dead that he would vote against a movement so noble so manifestly beneficent. Let each one pause and reflect that though now enjoying all the comforts himself, and his family luxuriously provided for, there are brethren not so fortunate whose loved-ones are suffering for the necessaries of life. Will you turn a deaf ear to their mute appeal for help? If you do, there may come a time when you will take their place, and there will be no one to succor you. Think what a great achievement to have a fund to supply the wants of your unfortunates that is their very own, just as if it were a policy in a life insurance or accident company, relieving them of the humiliation of asking for assistance or having friends come to their relief; a fund so easily raised that no member of the organization will ever miss the one dollar that he contributes per year. Think of doing so much good with so little.

Will you put this movement through in your Society, and notify our Committee of your readiness to work with us? L. G. Noel, Chairman; Edward S. Gaylord, W. T. Chambers, Committee for the National Dental Association.

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DIAGNOSIS AND TREATMENT OF CHRONIC ALVEOLAR ABSCESS.*

BY ARTHUR D. BLACK, B. S., M. D., D. D. S., CHICAGO, ILL.

The conviction that the profession is not making proper progress in the treatment of chronic alveolar abscess prompts the writing of this paper. The indifference of many practitioners and of their patients to abscesses which are constantly discharging pus into the mouth is an indication that there is a lack of appreciation of their serious nature. The fact that many people have not appeared to suffer from the presence of such infections is not proof that they have not been injured. There are certainly a sufficient number of cases which have lead to serious complications to warrant greater care. I will refer briefly to two cases of many which have come under my observation in recent years.

Mrs. R., age 35, was referred to me in November, 1910, for the resection of the root of the upper left lateral and the currettment of carious bone in the region surrounding this root. The following history was recorded: Patient had suffered with headaches of gradually increasing severity over a period of about eight months; these headaches were of almost daily occurrence, and mostly in the occipital region; they were sufficient to cause her to journey more than a thousand miles to Chicago to place herself in the hands of a Dr. Hugh Patrick, specialist in nervous diseases. She was under Dr. Patrick's care about six weeks, in a hospital part of this time, with but little benefit. Towards the end of this time she went to Dr. R. B. McKay, a dentist in Evanston, to have a treatment changed in a lower bicuspid. In glancing over the patient's mouth, Dr. McKay noticed a sinus over the root of the upper left lateral. He was able to press out several drops of serous fluid, while an examination revealed a small cavity and caries of the bone about the apex of the root. He suggested the possible relationship of this condition and the headaches. The patient laughed at him and said the tooth had been in that condition for many years, had never given her the slightest bother; that several dentists in her home city had examined it and had advised her that it was of no consequence and nothing should be done. Dr. McKay was insistent, however, and a few days later the root was resected and the cavity curretted. This was ten months ago and the patient has not had a headache since.

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*Read before Northern Illinois Dental Society, Rockford, Oct. 18, 1911.

Mrs. R., aged 58, presented in February, 1910, complaining of very slight tenderness in the region of the upper left cuspid. She was the mother of four children, two of whom died of tuberculosis. A definite diagnosis of tuberculosis in the mother had not been made, although it had been frequently suspicioned by both her physician and herself. At the time mentioned she had for three weeks been running a temperature of a degree or a degree and a half, with frequent headaches. She was very greatly alarmed as to her condition. While there was no sinus present in this case, and not sufficient tenderness of the tooth to cause her to consider it responsible for her systemic condition, a radiograph showed an abscess at the end of the cuspid root, which had been treated and the root filled years before. The root filling did not reach to the apex and I could not get an instrument through the canal. The tooth was extracted and both the temperature and the headaches disappeared.

I cite these two cases to impress the fact that of the thousands of cases of chronic alveolar abscess which we are neglecting, a considerable number are doubtless causing serious impairment of the health of the persons in whose mouths they exist. It is the writer's belief that these abscesses should be cured, or else the teeth should be extracted; that the loss of such teeth is not so serious as their retention, even though they are doing good service in mastication. In addition to the systemic effect, there is the constant destruction of tissue in the region of the infection.

DIAGNOSIS.

While it is not the purpose of this paper to consider the etiology, the most frequent causes of chronic alveolar abscess will be mentioned for the bearing they have in making a proper diagnosis. These causes are: (1) dead pulps, (2) failures to lance acute alveolar abscesses sufficiently early, often permitting the pus to strip the periosteum from the bone and cause necrosis, (3) failures to properly cleanse or fill root canals, (4) holes drilled through roots. (5) infections through root canals as a result of the too common practice of treating root canals without the use of the rubber dam, and of allowing cases to go between treatments without absolutely tight sealing of dressings.

To determine that a chronic alveolar abscess exists is usually not difficult; to determine the exact condition of the various tissues involved requires a more careful examination than is usually given. The latter is of the utmost importance, as it indicates the treatment for the particular case. In making a diagnosis attention should be given; first, to the periapical tissues; second, to the conditions within the pulp canal. First consideration should be given to the periapical tissues, for the conditions found will determine the prognosis and indicate the treatment to be employed. From the many cases which have come under the writer's observation in school clinics and practice, it is apparent that many dentists do not make any examination whatever of the periapical tissues; in fact, make no diagnosis at all other than to determine that there is an abscess. It is so easy to make proper examination of the periapical tissues, and this is so important that the common failure in this regard is inexcusable. It seems to be due to the fact that such an examination is classed as a surgical procedure and there is a fear of doing some injury.

In view of the importance of such an examination, a detailed plan of procedure is here suggested. The instruments necessary are (1) a small blunt end flexible silver probe, (2) a sharp stiff steel probe, (3) a pair of peridental membrane explorers, flat bladed instruments, with right and left curves and smoothly rounded ends, (4) a pair of ordinary right and left curved exploring tines, such as are used in examining for dental caries. For the sterilization of these instruments a bottle of phenol and one of alcohol will furnish the most convenient means. If the bottles are used only for this purpose the instruments may be dipped into them, although the better plan is to have two small flat dishes in which the phenol and alcohol may be poured, so that the entire instruments may be immersed. After the instruments have been washed in phenol, they should be rinsed in sterile water before they are placed in alcohol, otherwise the phenol will be gradually carried into the alcohol. The hands of the operator should be thoroughly scrubbed and care should be taken that the instruments used come in contact with nothing but the tissues examined. They should not be laid on the operating tray, unless it is covered with a sterile cloth. There is usually so little pain in connection with such an examination that even a local anesthetic is unnecessary; however, in an occasional case an injection of some preparation of cocaine may be desirable.

Previous to the instrumental examination, a history of the case should be obtained. There is often a history of an acute abscess, or of pain or tenderness following the treatment of the tooth, of an unusual number of visits to the dentist for treatments, etc. It will generally not take more than a very few minutes to elicit from the patient what may be of assistance. Next a careful occular and digital examination should be made, areas of inflammation should be noted, also sinuses and the character of the discharge. It should be remembered that in cases of caries of bone, the discharge is a thin serous fluid, not the ordinary creamy pus which we see in necrosis; also that the sinuses in caries are usually smaller, generally have slightly elevated granulation rings about their openings, and there may be several of them close together. Pressure of the finger will usually express some of the discharge. The finger may also detect areas of absorption of bone. The movement of the tooth in its socket should also be noted.

If there is a sinus through the gum, the soft silver probe may be used first. It should be passed along the sinus to determine its direction and its source. The soft probe is of little value in doing more than this. The sharp steel probe should then be passed along the sinus until it comes in contact with the hard tissue at its source. It may be necessary to differentiate between a number of conditions, and this can usually be done with the sharp probe. While the original cause of the abscess may have been a dead pulp or an imperfect root filling, those tissues about the apex of the root, which have become involved secondarily, often become the principal causes for its continuance. We may find the root end denuded of its peridental membrane, a cavity of absorption in the bone, the root may be partially absorbed, there may be caries of the bone, there may be necrosis, the probe may come in contact with a portion of a root, or with the enamel of an impacted or unerupted tooth; any of these should be easily differentiated with the sharp probe. If the root end is denuded, the probe will feel it as a hard substance which is usually rather smooth and the contour of the root can often be made out; if a portion has been roughened by absorption, this may be determined. If there is a cavity in the bone, it is easily discovered; by pressure on the probe, it will penetrate carious bone as it would unvulcanized rubber. Necrosis of bone is easily distinguished by its hardness and roughness, while the enamel of an impacted tooth will feel hard and very smooth.

It is important to determine the extent to which the peridental membrame has been destroyed, as a guide for treatment. If much of the root end is denuded, we should not expect to cure the case by other than surgical means, for there is no possibility of a reattachment of tissues to the denuded portion, and it will continue to cause inflammation of the surrounding tissues while it remains. The extent to which the peridental membrane has been destroyed can be determined with the sharp steel probe; after the point of this instrument is in contact with the root it may be carried in various directions, keeping the point in contact with the root until the whole area of denudation is covered. The pair of right and left explorers may be used in some cases to reach around roots. Oftentimes these instruments may be passed through the bifurcation and entirely around a denuded root of a molar tooth.

In cases in which there is a discharge at the gingival line, the pair of peridental membrane explorers should be used. These instruments, having blunt ends, will not injure the peridental membrane yet will enable the examiner to determine exactly the extent of the injury.

A very important aid in diagnosis is the X-ray. However, in the opinion of the writer, a very accurate diagnosis of most cases can and should be made without a radiograph. The radiograph is most useful in showing certain things that may not be learned with the sharp probe, such as the extent of large areas which can not be fully explored, the positions of unerupted teeth, and of portions of roots, the shapes and some idea of the length of roots, the outline and contents of root canals, etc. It should be remembered that the length of roots in radiagraphs is usually not correct, as the film is not held parallel to the long axis of the roots, nor is the X-ray tube always at right angles to the long axis of the roots, both of which will cause distortions. The X-ray is also important in cases of blind abscess, and in other cases which can not be easily reached with a probe.

The condition of the root canal can usually be determined very satisfactorily with the X-ray, as mentioned above. Without the radiagraph, it becomes necessary to open into the root canal and remove, if possible, the root filling. This is usually a very trying ordeal and it is very often unsatisfactory. The writer questions whether the dental engine should ever be used in opening a canal or in removing its contents. Certainly many teeth are lost as a result of the misuse of the engine in root canals.

TREATMENT.

After a full and accurate diagnosis has been made, the treatment is usually indicated. As stated in the opening paragraph of this paper, too many abscesses are being permitted to continuously discharge small quantities of pus, the most of which is necessarily absorbed by the patient. These abscesses should be cured, even though extraction is necessary to that end. As previously stated, these cases can not be cured so long as a considerable portion of denuded root remains; no medication can bring about a reattachment of tissue. The next radical step to extraction is the amputation of entire roots of molar teeth, or the resection of roots of certain other teeth. The writer has in a few cases resected buccal roots of molar teeth, but the operation of resection is usually best for the six upper front teeth, and occasionally for an upper bicuspid. Most such operations on lower teeth are failures, in fact about the only operation of this nature on a lower tooth that has been satisfactory has been the removal of an entire root of the first molar, and occasionally of a second molar. The bifurcation of the roots of the second lower molar is usually too deep into the bone for the operation to be successful.

For the amputation or resection of a root I would follow the technic of Dr. T. L. Gilmer. The root canal having been filled, and the soft tissues dissected back as much as may be necessary, a bi-beveled drill is used to cut a hole directly through the root at the line where it is to be cut off. Either the same drill or a fissure bur is then used to cut laterally in either direction from the hole. The end of the root should then be made as smooth as possible with a fissue bur having smooth blades—not cross cut. A local anesthetic should usually be employed for this operation.

There are on the market today many preparations which are advertised and sold as "cures" for chronic abscess. There is also a rather extensive use of these preparations and of other medicaments. We find frequently in our literature that chronic abscesses may be cured by forcing 95% phenol through the sinus. A good many clinics are given in which this treatment is used. We see and hear similar claims for other preparations, and I think I do not overstate the case in saying that a majority of practitioners are treating all chronic abscesses in about the same manner without differentiating the various conditions that present.

As previously mentioned the first point to be determined is whether or not the case is one that requires surgical treatment. If not, that is, if there is slight injury to the attachment of the peridental membrane, non-surgical measures should be employed.

No medication will cause the reattachment of tissues about the end of a root any more than it will in a pus pocket originating in an infection at the gingival line. Recent experiments by many men have shown that not only escharotics, but even mild antiseptics do more harm than good in the treatment of wounds. Why then should the members of the dental profession continue to force all kinds and varieties of "dope" through these tracts, when a three minute exploration would tell them absolutely that such treatment could not possibly effect a cure, and also in the face of the demonstrated fact that plain sterile water would be better to use in cases in which the roots were not denuded. If there is much denudation of the root end, medication will do no good; if there is slight or no denudation, medication is unnecessary, other than would ordinarily be used in the treatment of the root canal.

I would, therefore, suggest the following diagnosis and treatment of chronic alveolar abscess: Diagnosis: (1) history of case, (2) examination of periapical tissues, (3) radiagraph if necessary, (4) examination of root canal. Treatment: (1) extraction as a general rule if much denudation of root and tooth is loose, or if there is much denudation and the tooth is not loose, if the tooth involved is any lower tooth other than a first molar with but one root affected, (2) thorough cleansing and filling of root canal in cases in which the injury to the attachment of the peridental membrane has been slight, (3) amputation if much denudation of roots of molar teeth, provided remaining root, or roots, is in good condition, (4) resection if considerable denudation and tooth not loose, this for upper front teeth, and occasionally upper bicuspids and buccal roots of upper molars. In both of the latter (3 and 4) it is understood that the root canal should be thoroughly cleansed and a root filling made previous to the operation of resection or amputation.

PATHOLOGICAL CONDITIONS FOUND IN HUMAN AND ANIMAL CRANIA.*

BY WILLIAM BEBB, D. D. S., LOS ANGELES, CAL.

Mr. President, Ladies and Gentlemen: I desire to thank you for all of the kind things which you have been saying about me, and the lecture and exhibit which I am to present to you. But with all of your kindness and with the enthusiasm of an over-admiring press agent I am compelled to say that if in my efforts I equal one-half of the reputation which you have accorded to me I will be thoroughly satisfied.

I have been working along the lines of Comparative Odontology for the past ten years, not fifteen as your president has said. During that time I have collected approximately ten thousand specimens, three thousand of which are of animal crania. These were gathered from the various zoological gardens throughout the country, from domestic animals and from the animals which I have hunted and trapped in the fields and woods.

Added to these I have collected paleontological specimens, specimens of human pathological teeth and various other exhibits which have seemed to me to be correlated to the subject.

I hope, out of this collection and effort, that some day something will emanate which will be of practical benefit to our profession.

At the present time I have had little to offer. However, the work so far has been largely foundation work.

In response to criticism for taking animals in large series the old saying that "one swallow does not make a spring" is applicable. In order to make a reasonably accurate deduction in any scientific effort it is necessary to study specimens serially.

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*Delivered before the Chicago Dental Society, Jan. 22, 1912.

I have frequently observed in the writings of men in our dental journals that errors were made due to lack of sufficient material for comparison.

While much of our knowledge of human dental anatomy has come through a study of corresponding tissues in the lower animals, yet it seems to me that the average dentist is not well informed upon even the gross anatomy of the teeth of even our commonest domestic mammals.

But a very few of our dental graduates of today could answer the simplest of questions relating to the comparison of the teeth of these animals and of man.

[The remainder of Dr. Bebb's talk was made in connection with the exhibition of numerous stereopticon slides.]

DEPOSIT OF SALIVARY CALCULUS.*

BY G. V. BLACK, M. D., D. D. S., SC. D., LL. D., CHICAGO, ILL.

One year ago in an article entitled "The Beginnings of Pyorrhea Alveolaris," presented at the annual meeting of the Second District Dental Society, Brooklyn, New York, I devoted several pages to the announcement of some recent discoveries regarding the deposit of salivary calculus. This paper was published in the June, 1911, issue of the "Items of Interest."

When it was arranged that I present this subject at this meeting, it was supposed that I would have about two months for further work that had been begun, but ill health has made that impossible. Under the conditions now, rather than fail entirely in what was promised, I will tell the story of the results of this investigation so far as it has developed, presuming that many of those present may not have seen that which has been printed. The lantern slides will be the same as those published in the "Items of Interest."

The literature has been carefully searched for any help that it would afford. It seems that no very substantial progress has been made for very many years. It is true, however, that occasional efforts to gain further information were noted. Among these perhaps those by Burchard and Kirk (Cosmos 1895, Page 826; Burchard Dental Pathology, 1898, Page 448) have merited most attention. These theories seem to suppose that the formation of salivary calculus is due to a play of chemical affinities in the fluids of the mouth itself. This now seems to me untenable.

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*Read before Chicago Dental Society, Jan. 23rd, 1912.

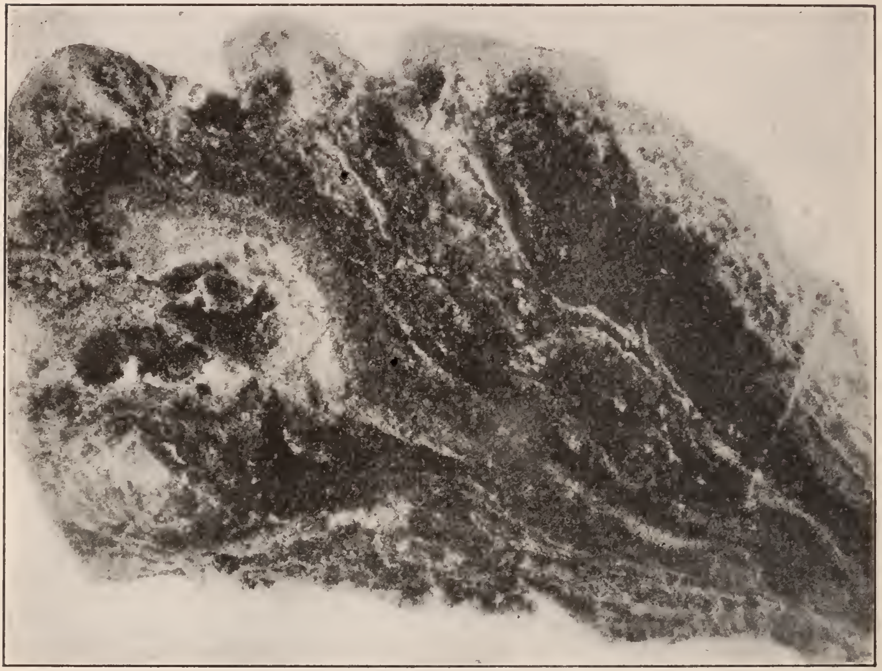

Fig. 1.

Photomicrograph from a section of a crumb of very black serumal calculus. The outer surface is the lower border of the picture, upon which accretion was in progress. It gives a slight showing of globules. The irregular veining shows lines of accretion. (Reproduced from June, 1911, Items of Interest.)

My studies of the deposit have been several years developing. They were begun in this way: I wear a full set of artificial teeth in the upper jaw. Calculus was frequently observed on this plate. This plate was examined critically morning and evening for deposits of calculus, and thoroughly cleaned after each examination.

In these examinations I soon learned this important lesson—when a plate worn in the mouth twelve hours, after having been perfectly cleaned, is placed under a stream of water from a hydrant for a few minutes, it will be perfectly cleaned of everything soluble in water. If there be no clinging of particles of food or other solid particles, the insoluble deposits only will be left. If the saliva is normal there will be nothing insoluble on the plate. In this I am supposing the plate has been so finished as to present no interstices or indentations that may become filled with food debris and microorganisms. Every part of the plate should be finely polished.

The study of the occurrence of the deposits followed day by day, and often four or five times per day, gave important information. It showed in the most conclusive way that the deposit of calculus is paroxysmal. These paroxysms of deposit occur with extreme irregularity. For a considerable time they seemed to come without cause or effect further than the fact of the deposit. It was soon discovered, however, that a paroxysm of deposit of calculus was generally—though not in all cases—preceded by a deposit of a gummy material that was not dissolved away in running water, hot or cold, and which gave no appearance of calcium salts. After-

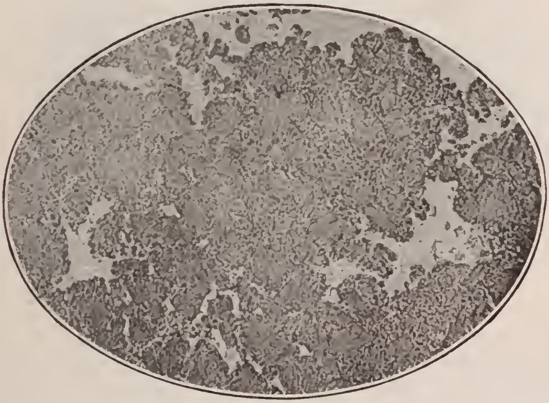

Fig. 2.

Photomicrograph of agglutinin of salivary calculus moderately well filled with calcium salts, but very soft. It was pressed down under a cover-glass in a thick solution of shellac in alcohol, after thirty minutes in alcohol to remove water. The general appearance of globules is fairly well seen. 1½ inch lens, 4½ foot bellows. (Reproduced from June, 1911, Items of Interest.)

ward when the plate was otherwise clean, this material remained, giving the part of the plate a shining, varnished look, and caused it to feel slightly greasy to the fingers. Generally it is perfectly transparent, not hiding the plate in any degree. I have seen this material spread over the entire plate, though such an amount of it is rare. More generally it is confined to the neighborhood of the salivary ducts. It is coagulated and whitened by boiling water and by alcohol or phenol. In this it behaves much like albumin. Sometimes the entire deposit will be of this clear material, but the rule is that a white or greyish color appears in the central part and spreads more or less widely over the area. The fact that I observed this order of deposit in my examinations, coupled with the general idea that the calcium salt was a precipitate from the saliva—which I had held in harmony with general opinion—led me to say in my first writing that this agglutinating material was deposited first, and the precipitated calcium salts became entangled in it. It now seems to me that this was an error. After watching it longer and studying

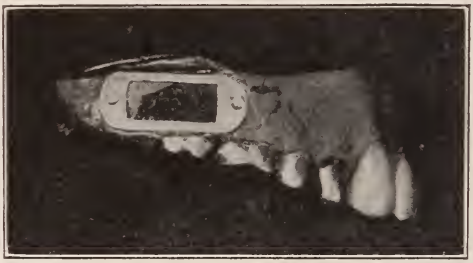

Fig. 3.

A device attached to a plate for artificial teeth, used for the collection of specimens deposited directly on a bit of the usual cover-glass for microscopic objects. It consists of a frame of No. 26 gold plate fastened to the plate with a gold screw at each end. All of the central part is cut away, as shown. The rubber plate has been cut flat over the area covered by the frame, and above and below ledges are left which will prevent a glass cut to fit the space slipping out in those directions. The screws keep it from slipping out endwise. The cover-glass is laid in the space, the frame is laid upon it, and screwed down. This exposes all of the central part of the cover-glass for the collection of films. When a film has been deposited on the glass while being worn in the mouth, the screws are removed, the frame lifted off, and the cover-glass, with the film undisturbed, is lifted and transferred to the liquids prepared for the staining process. A similar device may be attached to the natural teeth in such a way as to be removable. (Reproduced from June, 1911, Items of Interest.)

the deposit closer, I am more inclined to the opinion that a certain variety, or quality, of the gummy material carries the calcium salt with it because of a chemotactic quality that brings about this addition of salts. The fact remains, however, that the calcium salt is in the form of a precipitate and remains in that form in the hard calculus. This white material is a stronger, thicker deposit than the clear material about it, and it constitutes the bulk of the deposit in the more ordinary paroxysms. The abatement of the paroxysm is usually in the reverse order, the clear material continuing for a short time after the white deposits cease.

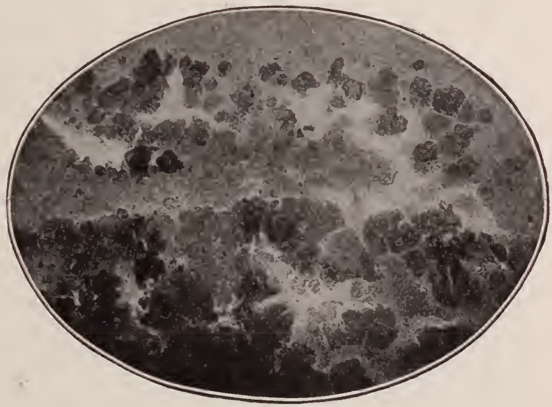

Fig. 4.

Agglutinin of salivary calculus showing irregular globular forms laid down on cover-glasses worn in the mouth. 1½ inch lens; bellows 4½ feet. Eosin stain with formalin as a mordant. The stain is diffuse. (Reproduced from June, 1911, Items of Interest.)

The most usual order of the parts of a paroxysm then, is, first, the clear deposit which spreads widest; then the white deposit confined more closely to the opening of the salivary ducts; then in abatement the clear deposit continuing for a time after the white has ceased. This deposit taken as a whole I shall call "Agglutinin of Calculus," leaving the discussion of its intrinsic characters until later.

The time which a paroxysm may continue presents very wide range. In some instances I have noted well marked paroxysms that were over and done within five or six hours; others have continued for three or four days.

In order to obtain a clear conception of the rise, progress and abatement of these, plates or traps should be examined and cleaned very frequently, often once every two or three hours. Not infrequently a paroxysm occurs during the night; the plate is examined and cleaned in the morning, and no further deposit occurs. Sometimes I have found persons, especially those in a very low physical condition, who had almost a continuous deposit of the clear agglutinin and none of the white. In such cases the clear material, when not regularly removed, will harden to a cheese-like consistence, and is very difficult to remove with the brush. Persons will sometimes be seen to remove this with the finger nails. A few others will be found to have the deposit of the white material occurring so frequently that it seems to be a persistent condition unless the plates be observed and cleaned once or twice every day.

When plates or natural teeth are cleaned every day once or twice, any of this agglutinin is easily removed with a brush and water. Nothing else is needed. If it remains forty-eight hours, it becomes very difficult to remove with the brush. If it remains a week it cannot be brushed away; it will have become so hard that it must be scraped away. This is true whether calcium salts are contained in it or not. However, it is only that containing the calcium salts that forms the hard stone-like incrustations upon the natural teeth or on plates. In the process of hardening, the soft agglutinin seems to disappear, but in its dissolution, or decomposition, a material is furnished that binds the calcium salts together in a more or less compact mass. Often this becomes actually stone-like in its hardness. Therefore we may find calculus of all grades of consistence from very soft to very hard incrustations.

THE CHARACTERS OF THE DEPOSITS.

The study of the deposits gave some difficulties. The most astute chemists whom I have consulted have told me that chemical analysis of this material would give no useful information. Chemical recognition was all that was necessary and this was not difficult. The physical properties and what it does when associated with other material, are the essential things to be understood, and my presentation will be, in the main, from that standpoint. I began microscopic studies of it to discover any form elements it might contain, but it was so transparent that my first effort to find form elements seemed futile. But in pressing it down in water, or in alcohol, the material appeared to be in globular form, the globules being irregular in size. Pressing down in balsam failed, because the whole mass became so transparent that it could not be seen. Pressing down in a filtered solution of shellac gave somewhat better results. All of these plans were but partially successful in showing form elements, yet they gave the idea of globules more or less definitely.

Staining failed at first, for the reason that the material failed to hold the stain. Persistence in this effort finally began to give results. Strong solutions of the "Alcohol Soluble" stains did the best; of these gentian violet and eosin gave the best results. Nigrosin also gave a certain degree of selection by leaving a certain character of globules unstained. Using formalin or phenol as mordants gives somewhat improved results. The material should remain in the staining fluid from six to twenty-four hours, and then should be washed from half an hour to an hour—often longer—in abso-

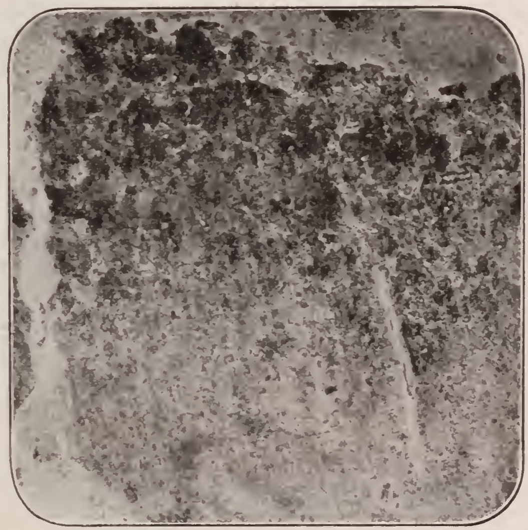

Fig. 5.

Ground section of hard salivary calculus ½ of 1/1,000 inch thick, showing globules in the upper part of the field. While these globular forms are hard calculus, that portion has not received as much calcium salts as it will contain later. The globules finally become almost completely obscured, as seen in the lower portion of the illustration. 1½ inch lens; bellows 4½ feet. (Reproduced from June, 1911, Items of Interest.)

lute alcohol, to remove superfluous stain and bring into view the margins of globules. The stained specimens may then be mounted in balsam in the usual way. Thus far the stains seem to be permanent.

Gentian violet gives a selective stain, bringing to the foreground globules of certain chemical qualities. Eosin gives a diffusive stain which colors all parts alike, but gives a view of the globular forms. Nigrosin colors some of the globules intensely and leaves others clear, producing some very curious results.

OF THE NATURE OF THE AGGLUTININ.

The agglutinin is composed of several varieties of globulin. A globulin is any one of a class of albuminous proteid compounds, insoluble in water or alcohol, but soluble in weak solutions of the neutral salts. The animal globulins include fibrinogen, serum globulin or paraglobulin, globin, myosinogen, crystallins and vitellin. This definition was written after consulting a number of medical and general dictionaries, but is not quite like any one of them.

These globulins are the most important of the proteid compounds. The common physiological processes could not be carried on without them. (See any first class modern work on Physiology.) Yet in the condition we are discussing, these globulins serve as the agglutinin in the formation of salivary calculus, and seem to determine its deposit. The thought that these globulins, so important in the animal economy, take part in such a process, and that conditions occur in which the secretions and excretions are loaded with them, including the urine, has been very distasteful to me. But the facts I have been reciting seem to enforce this view. I can no longer think of it as having been formed in the mouth.

GATHERING MATERIAL FOR STUDY.

For a considerable time the gathering of this material in a form for study, presented much difficulty. It was found impossible to take it up from its place of lodgement and transfer it to a coverglass without seriously distorting its form. But finally I happened upon a device by which it may be gathered easily and perfectly without considerable difficulty. With this device, which may be called a trap, the material is obtained in the best condition conceivable for staining, mounting and preserving for study. It consists in cutting a flat bottomed trough in the buccal surface of a rubber plate worn in the mouth, and fitting to this a small frame of gold plate attached with screws. This is easily removed and replaced. A cover-glass is ground to fit the space prepared. This is laid in, the gold frame laid over it, and then fastened down with the screws. This is worn in the mouth without inconvenience. When a deposit is discovered on the glass, the screws are removed, the gold frame lifted, the cover-glass carefully removed without disturbing the deposit, and conveyed to vessels ready to receive it for washing, staining and mounting. In this way we are able to bring the material under the lens in the exact form in which it was deposited.

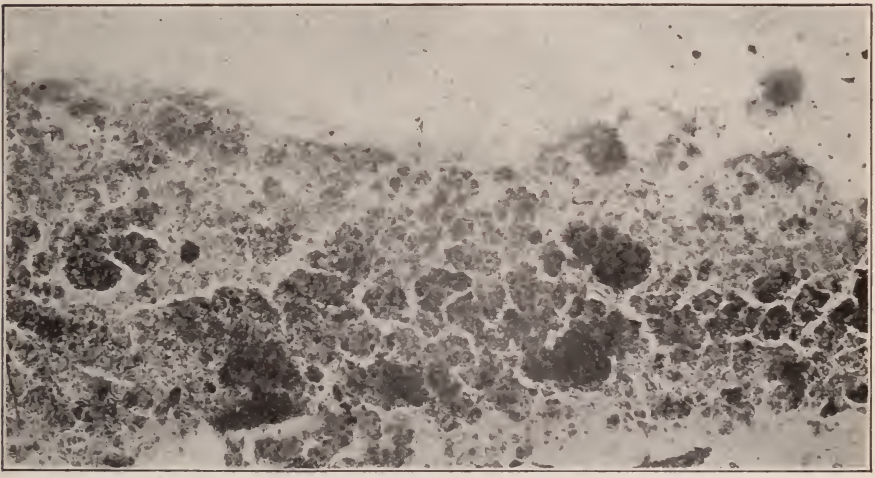

Fig. 6.

Appearance given by an accumulation forming in about ten hours, stained by gentian violet after it had been exposed to 4 per cent formalin for one hour, and repeatedly washed to remove uncombined formalin. It remained in the staining solution twenty-four hours, and was washed in absolute alcohol, which was repeatedly changed, and much of the time kept in motion for about two hours. 1½ inch lens; 4½ foot bellows. This specimen gives a beautiful appearance when seen in the microscope, but as the stain is a bright blue with gradations of the intensity of color in the different primary globules, it is only imperfectly represented by photography. The conglomerate structure can, however, be made out fairly well. (Reproduced from June, 1911, Items of Interest.)

In case the person has natural teeth, a similar trap may be devised and attached in removable form to the molar teeth or the lower incisors. This may be removed and laid in water while eating, if that seems desirable. This answers the purpose just as well as a plate with artificial teeth, or even better.

EXCITING CAUSE OF THE DEPOSIT.

With the means of collecting this material detailed, and the opportunity for inspection several times daily, one would seem to be well prepared to find the exciting cause of the deposit. Yet with all of this, the study was a perplexing one until finally a clew was found. A first clew to an exciting cause was found by keeping daily records of the food eaten in conjunction with the paroxysms of deposit. This soon gave a record of very good dinners, especially well handled as a direct cause of paroxysm after paroxysm, with unerring certainty. With myself and with others whom I have had the opportunity to examine, that relation has been practically constant. Now for a year and a half I have been able to be entirely without deposits of calculus in my own mouth, unless I purposely bring it on, which I have done many times for the purpose of obtaining specimens for study, or for the purpose of trying the effect of different food stuffs.

THE FOOD HABIT.

After studying this matter for several years, and regularly weighing the food eaten for a part of this time, I am of the opinion that we, as a people, are eating too much food, and that this is responsible for deposits of salivary calculus and probably other calculi as well. I do not think I was a larger consumer of food than the general run of men, but when I reduced my food one-third I had no more paroxysms of calculus; neither did I lose one pound of flesh. It is true that I found certain foods that should be partaken of with some caution. In the main, however, it was the quantity of nutritive material, rather than any other special quality. It requires less quantity of ham and eggs, braized meats with rich brown gravy, and such like foods, to produce a paroxysm of deposit, than of ordinary bread. But a large meal of bread alone, or bread and butter, may bring about the same result. If I go to a restaurant and order boiled pigs feet and sauerkraut and eat the whole of the order usually served, I will have a flood of deposit within six hours. If, however, I eat but half or two-thirds of the order served, I will have no calculus. I may drink one glass of milk before retiring at night, and arise in the morning with a clean mouth, but if I drink two glasses of milk, especially milk with the cream, I will have a deposit next morning that is much too thick for microscopic study.

It seems probable that the continued use of salt meats may be responsible for the formation of a calculus habit. Such food is so distasteful to me that I find it difficult to give it sufficient trial. At present it seems certain that among our people who live mostly, or altogether, on the fresh foods of our markets, and especially persons with fair to especially good digestive powers, take food in such quantities that more of the proteid compounds, and especially the globulins, are formed than can be used. Then these are eliminated in paroxysms in which not only the saliva, but the urine and other excretions are crowded with them. The reason why a dose of Epsom salts quickly ends a paroxysm of deposit of calculus is that the elimination is directed to the alimentary canal and the system is quickly drained of the superfluous material.

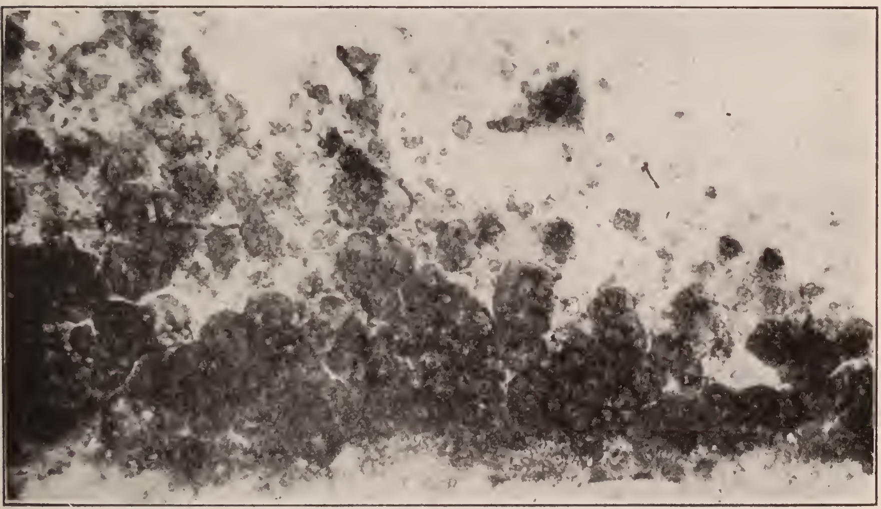

Fig. 7.

Appearance of a rapid deposit (about four hours), stained by nigrosin after treatment by formalin as a mordant. So far as the stain goes it is diffusive, but many of the primary globules refuse the stain, which gives a lobulated appearance. 1½ inch lens; 3½ foot bellows. (Reproduced from June, 1911, Items of Interest.)

In what I have written here I wish it distinctly understood that I do not regard this problem as having been worked out.

Further studies may develop facts that will lead to materially different views. It is a suggestion for further inquiry, rather than a finality.

THE MEANING OF THIS STUDY TO DENTISTRY.

If dentists generally would take up the study of these deposits earnestly, learn well the conditions which lead to them, study well the local conditions which favor them, together with the conditions which tend to render them innocent of harm, or to prevent them altogether, it would furnish a basis of prophylaxis that would lead to lasting benefits to our people. Dentists seem not to have begun the study of form with reference to cleanliness, forms which naturally refuse deposits, and forms which continually invite deposits. A form of the free margin of the gingivae which rises well up onto the crowns of the teeth and terminates in delicately thinned edges that are even actually sharp, give no place for miscroscopic growths or for debris. The opposite condition in which the terminal margins of the free gingivae have become dulled and thickened, forms a line about the teeth that invites lodgements. Of all things this is to be prevented in every way possible. Deposits of salivary calculus that are washed away while yet in their soft, pasty state will have done no harm to well formed gingivae. But it is still better not to have the pasty calculus to brush away. If the wave of so-called prophylaxis that is sweeping over our country could take this more intelligent form, and develop a more definite policy based on lines of well observed facts, they might teach forms of cleanliness that have more enduring qualities and freedom from harmful results.

I do not wish to decry any earnest effort to serve our people better, but in watching the great wave of so-called prophylaxis that has its devotees among us, I have been very fearful of the results. Good, well formed gingival borders will not long retain their finely thinned margins under frequent scrubbing with pumice-stone on a stick, or a bit of tape; I have a fear that the ultimate record will be of a condition that is not so good as in the beginning. In watching the spread of this work, and especially that which has been written about it, I have failed to find apparent a close study of the conditions that call for treatment in distinction from those that do not. I see no reason for scrubbing the clean portions of the crowns of teeth, for certainly they cannot be made better. Let us hope that this may take on a more studious and thoughtful form. The genius of the present century will be devoted to the prevention of disease, both in general medicine and in dentistry. Success in this cannot accrue without the most thoughtful and careful work in the science of health. It is the wise men in the laboratories that are doing most for preventive medicine. These men are supplying the thought by their experimental results that point the way to great things. We ought to have more of this class of workers in dentistry. We have hundreds of young men in dentistry who are fitted for this work by their preliminary training, who could help us if their thought could be directed into the proper channels and proper encouragement given them by the general profession.

In general medicine it seems probable that much useful information of importance in diagnosis may be derived from a study of the elimination of the globulins. How and where, for the most part, will be determined by trial, or in other words, a general study of the subject as it appears in the secretions generally, and especially in the excretions. Already globulinuria has a considerable literature, though the knowledge of it seems to be rather indefinite.

In an article entitled "Euglobulin Reaction in Urine," by Arthur R. Elliott of Chicago, in the *Illinois Medical Journal* for November, 1911, page 520, the progress of this literature is cited. There is also a discussion of the difficulties of diagnosis between albuminuria and euglobulinuria, a matter that is very liable to confusion by the close resemblance of the reactions of the globulins to albumin.

From what has been said of the deposit of globulins in the form of agglutinin of salivary calculus, one would expect the appearance of the globulins in urine to be transient. This, in fact, is what seems to occur, and these have been referred to as innocent albuminurias. This article by Dr. Elliott, is worthy of study for both its citation of authorities, and its discussion of the means of differential diagnosis now known.

If the physician could command the time to learn to distinguish readily the paroxysms of the deposit in the mouth, he would probably find a coincidence between this and the innocent albuminurias, and that each is an expression of the same systemic condition. It is possible that the careful comparative study of the saliva and urine may lead to clearer definitions, and simplify the means of division of the grave and the innocent albuminurias.

But are these repeated paroxysms of elimination of globulins innocent of injury to health? May they not have a causative relation to some grave conditions, or a harmful relation to more or less grave conditions now not fully understood? It opens up a very wide field for question and investigation.

The examination of the saliva and other secretions, in conjunction with the urine, seems to be demanded.

A DISCUSSION OF THE INFLUENCES THAT DISEASED CONDITIONS OF THE MOUTH, NOSE, AND THROAT HAVE UPON THE INDIVIDUAL WELFARE, AND A CONSIDERATION OF THEIR RELATIONS TO THE COMMUNITY'S HEALTH.*

BY HORACE W. STARKEY, M. D., ROCKFORD, ILL.

This is the topic which your committee has asked me to discuss with you in the few minutes at our disposal. It is a topic, or series of topics, upon which volumes could be written without exhausting it, but I will endeavor to epitomize some important points that would occur to each of us in making a critical study of the conditions mentioned. How broad the subject is, we see when we analyze briefly the factors that must enter into its consideration.

First. Diseased Conditions of the Mouth, Nose and Throat.

There are numerous textbooks and numberless articles written upon each branch of this trinity. And yet, before we can understand anything about the diseases of a part, we must know that part in health; so that our study must start with the structures and relations of the various tissues found in the mouth, nose and throat, and the functions performed by these structures singly and in their mutual relations, and the relations of these structures and functions to those of other structures and functions throughout the body. And having mastered these, we are to learn what part these organs play in the human economy when in a healthy condition, and what the influence of these healthy organs is upon other healthy or diseased structures and functions. Having determined all this, we must then consider departures from the normal and learn, first, the causes of these departures; second, the changes from normal produced by those causes; third, the alterations in structure and functions induced by these changes; and fourth, the manifold influences of these departures from the normal upon the individual. Quite a "The House that Jack Built" we discover.

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*Read before the Winnebago County Dental Society, November 16, 1911.

If it were possible to learn all this, we should have only made a good beginning with our chosen subject. It not only invites attention to the influence of these diseased conditions upon the individual, but when we have considered these, it immediately stretches out to consider their relation to the whole community. If we could answer all the questions raised by the first part of the subject, we should have a liberal medical education, more liberal than anyone living possesses, and more liberal than anyone living in this century is likely to possess; and could we answer all questions raised by its second part, we should know more about social science and social economics than anyone is likely to know for many years to come.

Nevertheless, let us not be hindered by the breadth and complexity of our subject from touching upon such points as may be available, and the foregoing glance at the field as a whole should enable us to touch these points in a logical and philosophical manner. Fortunately, we can shorten the paper by omitting the portion of it relating to diseases of the mouth, for, after the learned and exhaustive address by Dr. Evans to which we listened last month, further consideration of that division of the subject on my part would be superfluous, not to say impertinent.

THE NOSE AND THE THROAT.

Let us first briefly review the structure and functions of the nose, or more properly, the nasal spaces, for it is with these that we are chiefly concerned. These nasal spaces are, in health, essentially two tubes with irregular walls extending from the face to the throat, and connected with the various sinuses in the surrounding bones, with the lachrymal canal, and with the ear. Each space is formed, in a general way, by a floor which is level so that secretions may readily find their way forward or backward according to the position of the head; of an inner wall or septum which should be perpendicular, straight and smooth, so as not to interfere with the free passage of air; an outer wall, very irregular from the projection of the turbinate bodies, and a roof or vault which is even more irregular and which contains most of the openings to sinuses, etc., mentioned above. This whole space is covered with mucous membrane which is continuous with that of the whole alimentary and respiratory tract, with the conjunctiva through the lachrymal canal, with the drum of the ear through the Eustachian tube, and with the sinuses. This mucous membrane varies in character in different portions according to the functions to be performed in this particular locality, and the whole structure is richly supplied with nerves, blood vessels and lymphatics.

The principal functions of these nasal spaces are four: "Respiratory, Olfactory, Gustatory and Phonatory." While the latter three are, as we shall soon see, very important, the respiratory function is the most important; so important in many of the lower animals and in infants as to be vital, as life cannot be preserved without respiration through the nose. And where not vital, it is of extreme importance because of the changes wrought in the air in its passage through the nose.

The variations in the air in a climate and surroundings such as we are exposed to, are extreme and often very sudden. The air may be very moist, or it may be very dry. It may have a very high temperature as was the case many days this last summer, or it may be very cold. It may be pure and contain the proper proportion of ingredients, or it may be foul from dust, smoke, soot and other impurities and may carry very many noxious microorganisms.

It is one of the duties of the nose to receive air in all these different conditions and so change it that it shall pass on into the lungs in an approximately uniform condition at all times. The mucous membrane of the nose is very rich in blood vessels which convey heat and moisture, and this is particularly true of the erectile tissue or swell bodies which are located mainly at the posterior ends of the lower and middle turbinates, and along the lower border of the lower turbinates. When the air is dry or cold, these bodies enlarge and so present a larger surface to warm and moisten it, and when it is warm and humid they contract under the control of regulating nerves. It is estimated that in dry weather a pint of water daily is evaporated from the nose by the inspired air.

In addition to warming and moistening the air, the nose also filters from it dust, smoke, soot, pollen of flowers, etc., and also catches and, to a certain extent, destroys the various microorganisms which constantly teem in the air; thus saving the very delicate structures lower down in the respiratory tract from the deleterious effects of these foreign and irritating particles.

The second in importance of the functions of the nose is olfaction. We might at first blush think this is the most important, but it is secondary to respiration. That the olfactory sense is important we see when we consider the pleasure we derive from agreeable odors and also the promptness with which this sense warns us of noxious vapors, gases and emanations. One who has not an acute sense of smell is in much more danger from all of these than one who has.

The gustatory function is the third, and only slightly inferior in importance to the olfactory. We may not appreciate the fact that very much of one's enjoyment of food is due to the nose. We taste sweet, sour and bitter, but the delicate flavors and aromas are perceived by the nose.

The last function of the nose of which we shall speak, is phonation. For the majority of mankind this is much less important than the other three, but with singers and public speakers, it is of very great importance and to all who wish to have a pleasant and agreeable speaking and singing voice the condition of the nose should be a matter of much concern. The nasal passages act as a sound-box or resonator to the mouth and throat in vocalization just as certain parts of musical instruments are added for that purpose. If the nasal passages are of proper capacity and shape, the voice may be clear, pure-toned and sweet, but if there is much obstruction of these passages, the voice is thick and muffled, while with too much space and without proper checks upon the air, such as are normally provided by the turbinate bodies, the voice will be harsh and strident.

The nasal spaces are continuous with the pharyngeal space, and this in turn is continuous with the mouth in front and through the larnyx and trachea with the lungs, and through the esophagus with the stomach, and so with the whole alimentary tract. The nose is the beginning of the respiratory tract, as the mouth is the beginning of the alimentary tract. The mouth ordinarily should not take an active part in respiration. The principal function of the mouth is to receive food and, after proper preparation, to pass it on in its journey to the stomach. Its secondary function is to assist in phonation. I do not think that nature ever really intended the mouth for a purse, nor for a pincushion or needle case, nor even for a nail bag.

Just where the nose and mouth come together are three very important structures, the three tonsils; one on each side of the pharynx partly blow and partly above the soft palate, and the third on the back of the epipharynx just above the soft palate. The latter is ordinarily called adenoid or, less correctly, adenoids. These three are all glands of similar structure and are very active in infancy and early childhood, then they usually atrophy and are very small during the rest of life. Their function is not well known, but their location, forming a ring about the portal to the lungs and stomach, and their activity in infancy, shows that they have some important work. And their subsequent atrophy would indicate that this work was done, but we do not know that the remnant of tonsils does not continue useful; and the discoveries of the internal secretions of glands, made in the last few years would point to a large possibility of such usefulness. Much study and thought has been given to the function of these glands when they are so active in infancy without any very definite results. Recently two physicians. R. H. Good, *Laryngoscope,* June, 1909, and B. D. Sheedy, *Medical Record*, Sept. 25, 1909, have, at about the same time, advanced a theory that seems rather plausible, and which, it seems to me may be tentatively received for further investigation. Dr. Good and Dr. Sheedy believe that the tonsils have to do with immunization. Very great advances have been made in our knowledge of immunity in recent years. It has been known for centuries that the occurrence of certain diseases in individuals, rendered those individuals immune, or not susceptible, to a second attack, in many diseases for the rest of life, in others for a limited time. Why this is so, and how it is accomplished has been shrouded in the deepest mystery until recent years, and while the mystery is still great we have learned much of the utmost importance through the long-continued, painstaking and laborious researches of many workers. We now know in a general way that the presence of the microorganisms and toxins of certain diseases in the system stimulates the blood to produce anti-bodies and anti-toxins that destroy those microbes and toxins, and also stimulate the white blood cells to destroy such microorganisms as produce these diseases. In certain diseases this added quality of the blood is permanent, in others, temporary. And we also have found that the repeated exposure to relatively small numbers of certain microbes, such small numbers that no untoward effect is produced, has the same or even a more certain effect in producing immunity as the one great exposure in the case of such a disease as scarlet fever or smallpox. With every breath and with every mouthful of food, we take in numberless microorganisms, many of them harmful to the unimmunized individual, more of them indifferent, and perhaps most of all beneficial, and we all constantly have great numbers of various virulent microbes such as those producing tuberculosis, pneumonia and other septic conditions in our noses and mouths. But to these, in the numbers ordinarily present, we are immune when in robust health, and this immunity must be acquired. And the theory mentioned above, credits the tonsils, the three tonsils, mind you, with being an important factor in this immunity. These forming a ring about the nasopharynx are so situated that both air and food must pass over them. And, as in infancy, they present a relatively large surface and have a very active circulation, they are in the most favorable possible position for receiving and disposing of large numbers of these little foes, and thus are able to render the individual immune to the ordinary microorganisms, and having done their work, nature allows them to become quiescent. At any rate, the tonsils must perform some important service or they would not be so sedulously cared for in the economy. Whether in their diminished activity they still perform some useful function in adults, is wholly unknown.

The throat below the tonsils and back of the base of the tongue divides into the larynx with its wonderful apparatus for vocalization and which is the passageway for air to the lungs, and the esophagus, through which food is conveyed to the stomach. At this division is the epiglottis, the little trap door which closes over the larynx in swallowing. It seems to me that a bare reference to these is sufficient for our purpose.

Normally the nasal spaces are sufficiently free so that enough air can pass through on either side alone, to meet the ordinary needs of respiration, the throat is so patulous that it presents no obstruction at all, and the larynx, while permitting free respiration, also performs easily and unconsciously all the complicated movements required in phonation and vocalization. And the mouth receives the food and properly prepares it by mastication, insalivation, warming or cooling it, as may be required, and passes it on to the esophagus, the soft palate, and the epiglottis, at the same time closing the air spaces above and below.

Having thus outlined their functions, we are prepared to enter upon a discussion of the influences that diseased conditions of the mouth, nose and throat have upon the individual. I do not take it that this calls for a detailed discussion or even enumeration of such diseases, but the broadest consideration of general principles.

Diseases of the nose may be divided broadly according to their influence upon the individual, into two groups, those that cause obstruction and those that cause undue enlargement of the nasal spaces. The former are altogether the most numerous, but the latter, while less frequent, are much more difficult to relieve and produce very great discomfort and very serious consequences. In most cases of obstruction, we can increase the patency of the space and relieve the accompanying symptoms and discomforts. But when the turbinate bodies are diminished in size and the mucous membrane, and particularly that part containing the swell bodies, is destroyed, there is little that we can do, and the individual must go through life with all the discomforts and dangers of the condition.

The causes of obstructive nasal disease are principally traumatic, climatic and septic. Traumatic, from falls, blows, etc. When we see the way in which young children fall on their noses, we wonder that any of them ever grow up with nose in proper shape, but few falls result in any real damage to the nose. But the possibility of such damage should always be kept in mind and immediate attention given to replacing broken bones and dislocated parts. When this is neglected, much more serious operation must, in many cases, be undertaken in after years.

The climatic conditions in this latitude are such as to predispose to colds and catarrh which are likely to lead to obstruction through swelling and thickening of the mucous and submucous tissues. The tendency to colds must be combatted by hygienic measures such as proper clothing and diet, pure air, cool baths, and can frequently be much diminished by the use of bacterial vaccines to improve the condition of the blood so that it will destroy the microorganisms usually producing colds.

Most of the septic microorganisms, when present in the nose in greater numbers than can be destroyed by the bactericidal properties of the blood, lead to disease of the mucous membrane, and this disease is usually of the obstructive type. The microbes of diphtheria, scarlet fever, measles, pneumonia, common colds and many others, produce, in addition to their effects elsewhere, accute obstructive nasal disease.

Obstruction of the nose produces many and dire effects. Primarily it interferes with free respiration, and the air not being sufficiently warmed, moistened and filtered, causes irritation and ultimate disease in the delicate structures of the air cells and other tissues. Insufficient air entering the lungs, the blood is imperfectly aerated, and the individual suffers from insufficient oxidation and from excess of carbonic acid in the blood. In children the nose, not being used normally, collapses, and the mouth being kept open for breathing, the jaw bones and teeth do not develop properly, and we have the characteristic expression, the adenoid face; and the lungs being imperfectly expanded, we get the contracted chest. Moreover, this condition of the nose is likely to effect and frequently does effect some or all of the surrounding structures, particularly those to which the nasal mucous membrane extends. We found that this membrane extends through the lachrymal passages to the eyes. Most cases of lachrymal disease with overflow of tears are caused, or complicated by nasal disease, and we see many cases of persistent conjunctivitis and severe irritation of the eyes, that will not recover until the nasal disease upon which they depend, is relieved. Through obstruction of their outlet, or through direct extension of inflammation, any of the connecting air spaces may become involved, the antrum of Highmore, the frontal, the ethmoidal and the sphenoidal cells, each and all may be involved, causing painful and dangerous disease in these sinuses. Dangerous because it may extend to the brain, causing death. Also, we have been finding out in the past few years that some of the most insidious and hitherto unexplained diseases of the interior of the eye, diseases which frequently lead to total blindness, are caused by sinus infection and promptly disappear when the sinus trouble is cured.

In addition to all this is the fact that most all acute and chronic ear trouble is due to naso-pharyngeal disease. Through the Eustachian tube the disease passes to the ear, and there causes pain, deafness, noises in the ear, discharge from the ear, mastoid disease, with sometimes fatal effects from septicemia or brain disease.

On the other hand are those diseases that cause atrophy of the nasal structures, enlarging the nasal passages, and destruction of the mucous membrane so that the air goes too freely into the lungs without sufficient warmth, moisture or filtering. These patients are very uncomfortable from a feeling that the air passes through the nose too freely; from crusts forming from dryness and irritation of the nose and throat, and from irritation of the lungs. These also frequently lead to disease of surrounding parts, but not so frequently as the obstructive variety. Fortunately, these cases of idiopathic atrophic rhinitis are rather rare, but unfortunately, traumatic cases due to too much tissue having been removed in operation, are not so rare.

In the throat, the most important condition from the dentist's point of view, is diseased and enlarged pharyngeal tonsils. While you may frequently see other diseased conditions such as follicular pharyngitis, ulcerations, enlargements and diseased blood vessels to which the attention of the patient or his friends may be called, the tonsil cases are altogether more numerous than all others, and the careful dentist will call attention to this condition as well as to nasal disease, and advise that it receive efficient treatment.

While normally the tonsils cease their great activity in early childhood and shrink to inconsiderable masses, in frequent instances this does not occur, but one or all remain large or increase in size and become diseased and cause much trouble. This enlargement may cause obstruction to respiration with all the symptoms and dangers mentioned above in nasal obstruction, and their disease may be accompanied by pockets in which food is caught and undergoes decomposition, and in which the microorganisms that are normally destroyed, find a most congenial place for multiplying, and pass from here to the blood and lymph channels. This absorption of microbes and their toxins is one of the most frequent, if not the most frequent of causes of tuberculosis of the glands of the neck, and of some systemic diseases. We now know, for instance, that very many cases of acute and chronic rheumatism are due to diseased tonsils.

These dire results naturally following disease of the nose, mouth and throat, we see how important it is that the utmost should be done to prevent and cure such disease. In prevention, the measures to prevent colds mentioned above are applicable. Treatment is constitutional and local. Besides the means used to promote general good health, local measures are adopted to relieve or cure the conditions present. These measures are surgical or operative, on the one hand, and topical, as with applications of sprays, vapors, lotions, ointments, etc. There are many who think and teach that the only beneficial treatment of throat and nose disease is operative, and that one is throwing his time away in treating it otherwise. With this contention, I have no sympathy. There are many patients who have great discomfort and ill-health from nasal and throat disease that are relieved and kept comfortable and well for many years by applications to the effected tissues without operative interference. On the other hand, there are many in which operation offers the only hope of relief, and here the patient should receive the benefit of prompt, careful and skilful surgery. But no operation should be undertaken without a definite idea as to what it is expected to accomplish, and also definite knowledge as to the results that should naturally follow the operation, not only the immediate but the remote results—not only as to what will be the effect upon the patient in a week, a month or a year, but also the effect in twenty-five or fifty years, should the patient live so long. An operation should only be undertaken when there are definite indication for it, and then should be so devised as to meet those indications with the least possible destruction of tissue, and no destruction of useful tissue unless it is absolutely necessary, always remembering that it is very easy to remove parts, but having been once removed, they cannot be replaced, though we seek with prayers and tears to do so.

There has been in the past, and is even now, too much reckless surgery in the nose. With too many, when a patient presents himself with some obstruction to the nasal spaces, the first and only thought is to "clean out the nose," and in doing this, parts are sacrificed that should be preserved, and the last state of that patient is worse than the first. The immediate results may be excellent and the patient and physician congratulate themselves on a most happy cure, but in a few weeks the changes commence that result in the enlarged nasal spaces and never again is that patient either well or comfortable. We see altogether too many such patients. The indications for operation in the nose are to improve drainage and secure easy respiration, and if these can be met with little or no destruction of tissue, the greatest possible good with the least possible harm, has been secured. In particular should the lower border and ends of the inferior turbinates be avoided, for here we have found that the swell bodies are principally located.

And what is true of the nose, is also true of the naso pharnyx. Here the three tonsils are the principal offenders and the principal objects of surgical interference. But there are three, just three, indications for the removal of these bodies. The first of these is obstruction. When tonsils or adenoid, instead of undergoing contraction in early childhood, become enlarged and by obstruction interfere with respiration, they, or at least the diseased portion, should be removed.

A second indication is infection. When the more or less enlarged tonsil is full of crypts and pockets that are, or may become, culture-tubes for microorganisms, thus endangering or infecting other parts, or the whole body, it should be removed, and this source of danger eliminated. And when tonsil or adenoid is the frequent seat of inflammation, and the individual is sick with tonsilitis or quinzy, the offending member should be removed. But the mere persistence of some tonsillar or adenoid tissue which can be seen or felt, but which is flat and smooth and has no crypts and is not subject to inflammation, is not an indication for surgical interference. Such a flat mass is doing no harm, and may be doing some good, so it should not be interfered with.

But where operation is found necessary, it should be performed by an expert. There seems a vicious idea present in the community among physicians and the laity, that anyone can perform a tonsil or adenoid operation, and we find men everywhere, without special training or skill, undertaking these operations and doing them in a very slovenly and imperfect manner.

After a very long experience, I would say that I do not consider a tonsil-adenoid operation either simple, easy or devoid of danger, but between this and a simple appendicitis operation, the latter is the less severe, and requires less experience and skill. My plea is that those who wish to do work upon the nose and throat, as well as those who take care of the teeth, should be willing to devote enough time and care to preparation to be able to do that work in a proper manner—should be able to look at the whole subject philosophically and critically, and not merely because a tooth aches to jerk it out, or because a nose is obstructed, to remove the turbinates, or because there is some tonsillar tissue found, to go after it. You know, in German a dentist is called "Zahn Artz" or a tooth mechanic, and it is, I take it, because a few "American Dentists" so called are only "tooth Carpenters" that the very severe and unjust article by Dr. Wm. Hunter in *The London Lancet* of January 14th, last, was written, and it is because there are some who should be called nose and throat carpenters that many people are afraid to go to even the best of nose and throat specialists.

But this is a digression. We will consider the general effects of these diseases upon the individual in connection with their relation to the community's health. It may seem strange, at first, that this was tacked on to the topic, but when we remember that this meeting is only one of hundreds throughout the land, called to arouse general interest among people in all that pertains to and makes for better health and longer lives, we see that it is proper and necessary. We have been learning much more completely than ever before, the truth of the words of Holy Writ "For none of us liveth to himself, and no man dieth to himself," (Romans 14-7.) And one of the principal objects of these conferences is to impress this upon people. The man in a home of wealth where everything possible is done to protect his children, must understand that the sickness of an unknown and unheard of child in the slums may mean the sickness and death of one of his own loved ones, or even the man without a family and in good health must understand that sickness in the community, though unknown to him, still means loss to him.

The community's health is the total of the health of the various separate individuals that compose that community, and that which causes the sickness and death of an individual, by so much lessens the total efficiency of the community. But in addition to this, if the sickness of the individual is contagious and so likely to extend and incapacitate others, by so much more it becomes a matter of general concern. While diseases of the mouth, nose and throat directly cause but a very small proportion of deaths, they indirectly cause a much larger proportion, and they do cause a very large part of the disability from sickness. I think we shall appreciate this the more if we each of us think of the sickness that has occurred in our own families and among our immediate friends in, say the past five years. Ordinary colds and sore throats of all kinds, practically all ear troubles, most cases of grippe, and all cases of sinus diseases would at once occur to all of you as being included, but in addition, most cases of diphtheria, scarlet fever, measles, small-pox, and other contagious diseases would come under this head because most infectious diseases find their means of entrance to the body through the nose and mouth.

But of equal importance to the individual and to the community is the influence that disease of the naso-pharynx has upon the susceptibility of the individual to these and all other diseases. As representing all, we will consider the condition of a child having, we will say, enlarged and diseased tonsils and adenoid. Such a child has difficulty in breathing so that the nervous and muscular systems are constantly overtaxed and the child is continually tired, this weariness being increased by lack of a proper amount of restful sleep. Respiration being inadequate, there is lack of proper aeration of the blood which, in turn, effects digestion, and assimilation and nutrition is below par. All of this in turn reacts back again upon the blood so that its resisting and bactericidal powers are diminished and the child is an easy victim of any contagion to which he may be exposed. The strong, hearty child may be exposed to a considerable contagion and not contract disease, while the child we have just described succumbs to a much less exposure, and sickness of any kind is much more severe, more prolonged and more dangerous than in the robust.

Thus is the total amount of sickness and mortality in the community increased, but the influence does not cease here. This child, having contracted disease, is liable to impart it to others, and so the circle grows, not only in children, but in adults, for the adult with poor nutrition and unstable nervous system is also much more susceptible to disease, and among such subjects pneumonia, tuberculosis and all contagious and infectious diseases find a very large proportion of their victims. And he is more easily a victim, not only because his general health is impaired, but also because the nose and throat presents a ready place of entrance for the microorganisms producing these various diseases.

And each day's sickness, and each life lost is an economic loss to the community, for we must remember that not only in adults is sickness an economic loss because of time taken from useful occupation, but in children also lost time means loss of schooling and as the community pays for the schools whether the child is present or absent, each day's absence of a pupil means direct pecuniary loss for which the taxpayer must pay. And when we add to the loss in time of those sick, and the loss to the community of the value of the lives of those who die; the loss in efficiency of those who continue to struggle on with energy impaired by the diseases we are discussing; of those totally or partially blind from this cause, and of those totally or partially deaf from this cause, we see how great a factor in the individual welfare and in the welfare of the community the mouth, nose and throat is. In addition we must remember that the physical defects so caused are but part of the story, and that accompanying this are mental deficiencies and moral obliquities, for it is well known that the mind is less active and acute when the general physical condition is below normal, and also that many children with perverted moral tendencies become normal when physical defects are removed. And we see how great a problem we are discussing and th necessity that in the general awakening of the community to the economic waste of poor physical conditions, that attention should be called far and wide to the important role of diseases of the mouth, nose and throat.

AN APPLIANCE TO ASSIST BREATHING IN OBTURATOR CASES.*

BY HERBERT H. BETHEL, D. D. S., WIESBADEN.

I will ask your indulgence for a few minutes while I describe a little contrivance for facilitating nasal respiration in connection with obturators.

The ordinary procedure for obtaining accurate pronunciation of the various letters of the alphabet, the prevention of the escape of breath, etc., I will omit, as you have all, no doubt, at one time or other labored over these impressions of the soft parts.

The contrivance I shall endeavor to explain I have called a respirator. The patient had worn an all gold obturator for many years. It had stood her in good stead, and had made life agreeable to a charming and educated woman. In asking me to construct a new obturator for her she presented her case in an intelligent manner. She complained that her old obturator corrected only a physical difficulty, and in cutting off her nasal breathing left her exposed to the disadvantages of mouth breathing, and in fact resulted in her suffering almost continually from bronchial troubles.

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*Read before the American Dental Society of Europe, Dresden, 1911.

Her natural habit, however, was to breathe through the nose, and this compelled her to lay aside the obturator at night. This was very embarrassing for her, as she was a married woman.

These I thought were two very good reasons, the one hygienic, the other esthetic. The problem I had to face was not an easy one. It meant, put a hole through the palatal restoration, large enough to satisfy the lung capacity with an inward and outward flow of air without any attendant sense of labored breathing when the mouth was shut. And this hole had to be so constructed that food could be kept out of it, as in case of stoppage its purpose would have been defeated, and also, in such a way as to prevent the escape of air in talking; otherwise the pronunciation of some letters would have been seriously affected.

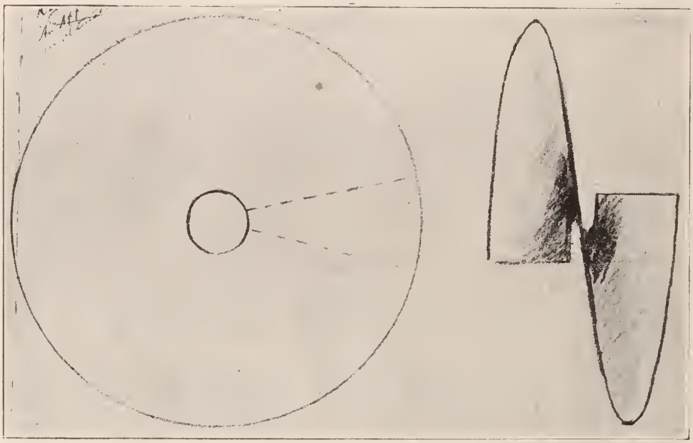

Fig. 1.

I solved the problem before me, after considerable study of air currents and pressures with respect to the pronunciation of the letters of the alphabet, by constructing a spiral tube of gold, which I vulcanized into the obturator at a point about midway between the posterior end of the obturator and a line taken from right to left upper second molars at the palatal cusps. I may say here, this obturator was of vulcanite attached to a partial gold plate carrying teeth and clasps. Apertures were provided on the oral and nasal sides of the palatal restoration for the air stream. The respirator was so inserted that the spiral tube took a posterior direction from the aperture on the oral surface, my reason for this being, that in case of explosive sounds—k, g (hard), p in put, etc.—the air would be reflected from the palate rather than change its course and go backward through the tube. In natural speaking, for the pronunciation of these sounds, we deny the breath egress through the nose.

My reason for making the tube spiral was, that in case of mute consonants where the front of the mouth is closed either by the pressure of the tongue against the hard palate or by closure of the lips, the air would be controlled to a certain extent and could not rush through. As a matter of fact I found that the patient could pronounce the letter "m" beautifully, without any of the accompanying effect of a cold in the nose, so often noticeable in those wearing obturators.

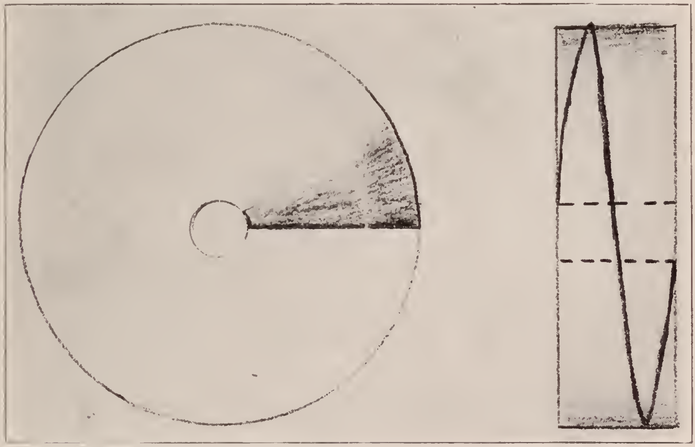

Fig. 2.

The dimensions of this artificial nasal canal are approximately a disc 20 mm. in diameter by 5 mm. thick. It can be readily cleansed and on the oral side I made a platimo-iridium slide which could be slid over the oral aperature at meal times to prevent food getting in. The dimensions of the tube were determined by a crude method of experiment. The patient was given tubes of various transverse dimensions, and asked to close the lips tightly about one after the other, pinching the nostrils with the fingers, and breathing only through the tubes. The tube with the smallest bore through which the patient could get sufficient air, without producing a sense of labored breathing was chosen and the respirator constructed on these measurements.

Two discs of 22k plate 20 mm. in diameter were cut and a segment 5 mm. on the circumference removed from each disc. Placing the discs center to center and punching the center to about 5 mm. in diameter. solder the edges where the segments were removed along one radius of each disc. Now pull the segments away from one another till the perimeters are 5 mm. distant. This now forms a spiral. Solder a piece of 22k plate about the outer circle and make a tube to fit the hole in the center, and solder. As a result we have a little gold box with a spiral tube in it, opening on opposite sides. The aperatures are provided with vertical tubes extending to the nasal and oral surfaces when the respirator is vulcanized into the obturator. This permits of a better finish. The iridio-platinum slide closes the tube on the oral surface. The construction and fitting of the respirator is difficult, but I found the results gratifying.

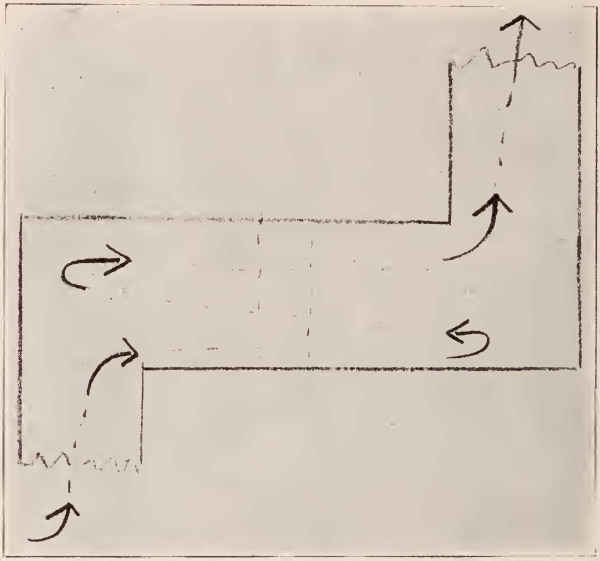

Fig. 3.

I thank you, gentlemen, for your attention.

THE USE OF GYSI'S ARTICULATOR.*

BY W. THIERSCH, D. D. S., BASEL.

[Within a few hours of the time this paper was being prepared for the printer word reached the editor of the sudden death of Dr. Thiersch. At the present writing no details are available regarding the cause of his untimely taking off, but the editor cannot allow the Journal to go to print without expressing his personal grief at the loss of so promising a young man. Dr. Thiersch was rapidly making a brilliant name for himself, and his early demise will prove a distinct loss to the profession of Europe. To the family and friends we wish to express our sincerest sympathy. Editor Dental Review.]

The subject which I have the honor to present to you today will not require many words to explain, as I propose to make it rather one of practical demonstration.

A young man who has only been engaged in his professional practice a few years cannot come before your distinguished body and speak about his personal experience or opinion in such and such a matter. He can simply show a few little things he may have done, and emphasize the points which seem to him to be of general interest.

In such a way, I wish to show you at a tableclinic on Monday next the models of three practical cases, which I think worth consideration, and the purpose of this little paper is merely to facilitate this demonstration by explaining the points to which I wish to call your attention, and to invite every one of you who may be particularly interested in the subject to spend a few minutes at my table.

Ten years ago, Dr. William Davenport, in his paper on "Dental bridge and pier construction," called the attention of our profession to the fact that: "A successful dental bridge depends far more upon proper articulation than on any other condition."

He says: "In the science of dental articulation we have established laws which govern the movements and relations of the teeth to the dental arch. The principles of interlocking, counterbalancing and selfretention of the teeth hold good in the dental arches, even though restored by bridges or other artificial means."

It is therefore a fact acknowledged long ago, that on the proper anatomical articulation of a bridge depends not only its efficacy in mastication but as well its longevity as far as the conservation of the anchor roots by normal distribution of the forces acting upon them is concerned.

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*Read before the American Dental Society of Europe, Dresden, 1911.

It is furthermore quite natural that this consideration becomes more and more important with the increase of the size of the bridge.

Now, then, the masticating surface of any dental substitute may be said to be in proper anatomical articulation, if it has been fashioned in such a way as to be in harmony with its environment and to reproduce exactly, in every important detail, the surface of the teeth which have been lost.

The means of determining how the natural surface was shaped are quite simple in small cases, with a single crown for example or with a bridge of two or three teeth only.

There we are able to deduce this shape exactly and without difficulty from that of neighbors and antagonists. It will merely be a question of ability in modelling to obtain a properly articulated tooth surface in such a case. But the more teeth there are missing so the difficulty of this work must increase.

And if we come to one of those cases where all or nearly all the toothcrowns have been lost, leaving, however, roots strong enough to carry crowns and bridges, this simple method of copying completely fails and we are obliged to look for other indications for shaping our masticating surface.

The recent investigations on the articulation of the human jaw have shown that our mandible moves on a determined path, the form of which is the necessary complement to the anatomical form of the teeth, which itself again, is a family or race symptom, each individual has inherited from his or her ancestors.

Or in other words, the form of the condyle fossa on which the lower jaw slides, and the distance of the rotation points around which the lateral movements are performed are built up in each individual according to these inherited tooth-forms, corresponding to the depth and the lateral inclination of the masticatory groove, the size and position of the cusps and the inclination of their surfaces.

Consequently wherever a considerable number of teeth have been lost the only way to build up an artificial substitute of really good standard will be to determine the elements which govern the jaw movements of the individual in hand, to conclude therefrom the shape these teeth must have had, and to fashion the articulating surface, the longitudinal groove and the cusps of our substitute according to these findings.

How many a bridge has been executed in former years without due consideration to the laws governing jaw movements, how many a one has been built merely on an ordinary hinge-articulator?

The consequence of which was a bridge which occluded quite nicely, a bridge the teeth of which were in uniform contact as long as the mouth was closed, in the position of rest.

But if there was anything to be seen of articulation, of interdigitation, of selfretention, of uniform contact during the lateral movements of the jaw this was merely a matter of good luck.

Empirism had in such a case reached by chance what rationalism can today work out to a much more perfect degree.

Many of those bridges have held in the mouth for years and years, done considerable service to the patient and given considerable credit to the operator, especially in former years, where it was the exception rather than the rule for a dentist to undertake extensive cases of bridgework instead of extracting and putting plates in his patients' mouths.

But on the other hand, how many such bridges have come under the severe criticism, not only of a benevolent professional brother, but also of the public, ever ready to condemn?

How many a patient has been discouraged for life from having anything to do with fixed artificial teeth, and last but not least, how many a dentist totally disagrees with extensive bridge work at this very day, giving his personal preference to partial plates?

Even if the lack of success in some of those insufficiently articulated bridges had never been recorded, it would nevertheless be our duty to progress with science and to utilize to the benefit of our patients every step forward which the knowledge of the problem of articulation has made in these last years.

As far back as 1860, Bonwill, as you all know, was the first who attempted to determine the anatomical laws of the articulation of the human jaw and to construct an appliance which would imitate these movements in such a way that it could be used in setting up artificial dentures.

For over 40 years the Bonwill articulator was the only instrument of this kind which was used by the profession. But it was a comparatively small number of the most progressive colleagues, especially in the United States, who took the trouble to work with the help of this contrivance, whereas the infinite majority of dentists all over Europe never went closely into this matter and are still using the old fashioned hinge articulator, in spite of its inferiority.

Bonwill had taken measurements from patients and skulls and constructed his appliance to fit the average.

He knew that the condyle must move on a path, but his condyle-path is horizontal, whereas today we know that in most individuals it is more or less inclined.

He knew that the lateral movement of the jaw is made around rotation-points, but he believed that these were anatomically fixed points situated in the condyles themselves and he accepted a fixed average distance of four inches between the two points.

Today we know that these points are virtual ones resulting from the combined play of all masticatory muscles, and that their distance changes materially in different individuals.

If, therefore, a patient, the conditions in whom are very near the average, is treated with the Bonwill articulator, the result can turn out most excellent.

If, however, the patient shows different conditions from the average measurements, accepted by Bonwill as normal, complete failure may be the result.

This is the way in which many a dentist has been discouraged from the use of Bonwill's instrument, after having taken much trouble to get acquainted with its application. Others have followed Bonwill and considerably improved upon his work.

The principal ideas leading to these recent improvements were the following:

Firstly. Instruments had to be constructed with which it was possible to measure the elements of articulation in each individual, instruments which would record the form of the condyle-path, its inclination to the horizontal plane, and the distance of those virtual rotation-points.

Secondly. An articulator had to be invented in which the condyle-path was interchangeable for each individual case, in form and in inclination, in which the distance of the rotation-points was also interchangeable and both interchangeable according to the measurements of each patient.

Schwarze, Walker, Parfit and Christensen have worked along these lines and constructed appliances in which all these improvements were realized to a more or less perfect degree.

Their contrivances are beautiful instruments of scientific research and record, but all of them are so complicated that they could never make their way into the laboratory of the dentist at large.

In addition, they lack the necessary stability so that they allow for a number of disturbing movements which should be excluded in the construction of an articulator.

Kerr, Grittmann and Wallisch have constructed simpler appliances, but they all lack one or the other of the points hereinbefore mentioned.

An important addition to all these instruments is Snow's face-bow, which, as you know, serves to determine and maintain the exact relationship between the dental arches and the condyles in setting the models into the articulator.

I have only mentioned a few names of those who have given valuable time to the development of this interesting problem. There are many more who have successfully contributed to the advance of this work and you will pardon my omitting some of them.

After all it was left to Dr. Gysi, of Zurich, to construct an appliance which answers in a perfect manner to all the requirements above stated. The elements of articulation are measured by simple and accurate instruments and these measurements are conferred upon an articulator. The condyle-path of this articulator is interchangeable in form and inclination, also the distance of its rotation-points.

Gysi claims two more advantages:

There is also an interchangeable incisor-guide and the opening movement is independent of the slant of the condyle-path, so that this articulator realizes, for the first time, a combination of the downward and the forward movement.

Furthermore, it is constructed in such a rigid way that it excludes any undesirable movement and is made light and simple enough to be thoroughly practical.

Now, gentlemen, I have not come before you to give you a description of the Gysi articulator or to lecture on its application in general. I am sure you all have read with the greatest interest the articles of Professor Gysi in the *Dental Cosmos*, January till April, 1910, and I trust many of you have already used his articulator in practice. What I want to show you on Monday next is the result of its use in some particular field of application, in extensive bridgework.

Just for memory's sake I will pass round Gysi's measuring instruments, an empty articulator, on which you will notice all the points mentioned, and two articulators carrying full sets of artificial teeth. You will observe the beautiful harmony of an entire denture set up in such an appliance. All the teeth are ground and placed in such a way that their cusps slide in a most perfect manner in the corresponding depressions of the opposite row. The contact between the upper and the lower teeth is just as uniform in any position the jaw may assume in lateral movements as it is when the jaw is closed in the position of rest, or in other words, articulation and interdigitation are perfect.

Beside the fact that the upper and lower teeth are in perfect harmony with each other on either side, both sides are also balanced in such a way that they work together most perfectly.

Take for example the excursion of the lower jaw to the right side: all the teeth on that side will remain in perfect contact during this movement and at the same time the lingual cusps of the lower left molars will keep in contact with the buccal cusps of their antagonists, so that the pressure of mastication is distributed harmoniously over the entire denture and can never act on one or a few teeth at one time only.

You realize how important these facts are in full plates, how excellently such a plate must hold in the mouth during mastication and how efficacious it must be in triturating food. But you will also see the advantage of the use of such an apparatus in bridgework. You will see, without any further explanation, how important it is, that every single root carrying a bridge receives due pressure in mastication and that no single one is called upon to support all by itself the entire pressure in certain movements, as it is the case in bridges set up in an old style articulator.

If you look over Dr. Gysi's article in the *Cosmos* you will find very little mentioned about bridgework. He merely says: "Even without measuring the elements of articulation, but accepting average figures the articulator will be found of great value for all partial dentures, bridges and even for single crowns, because, when the natural movements are reproduced the proper height of the cusps can be accurately determined, and porcelain-facings can be so placed that the liability of breaking, because of improper occlusion or articulation will be reduced to a minimum."

This is a very weak statement, indeed. Much more flattering things could be said about the use of Gysi's articulator in bridgework. My personal opinion is that particularly his measurements and the possibility of conferring their results upon an articulator are of inestimable value in treating cases like the ones you are about to see. It is, however, natural that Dr. Gysi did not enter more particularly upon this side of the question.

The idea leading him through all the years of hard work which preceded the publication of his inventions was the great thought of giving to edentulous humanity at large artificial substitutes which would do better service than the ones hitherto in general use, by constructing an articulator the use of which was so simple as to be at the reach of every single dentist.

He naturally had in mind platework first of all. For single crowns and small bridges his measurements are of little importance, as he himself states. Extensive cases of bridgework, however, require, if carefully executed, so much time and so much expense that they will always be the privilege of well to do people and will remain the exception rather than the rule, compared to the enormous quantities of plates furnished to suffering humanity day by day.

This is the reason why Dr. Gysi says no more about this side of the problem, although his ariculator and particularly his measuring method may certainly be called a blessing to all who take the trouble to do such complicated work.

I cannot pass round the models of my bridgework cases but am compelled to arrange for a table clinic in order to show them to you, because they are plaster models and the point I wish to emphasize is the lateral movement of the jaw and the function of those bridges therein. By repeatedly making these movements with the articulator these valuable models would be deteriorated in a short time.

Therefore, I will try to give you an idea of the work by means of drawings.

They are not drawings, done in an arbitrary way in order to bring out certain points, they are authentic photographs of authentic models and reproduce the cases faithfully. They will, however, only show the harmony on either side in lateral movements, whereas the harmony between both sides can be demonstrated only on the models themselves.

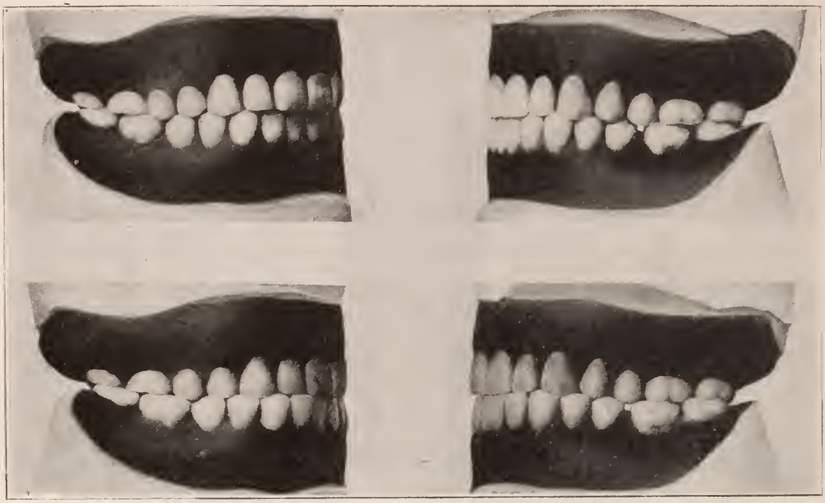

Fig. 1.

In all these pictures you see the cases taken from either side, left and right, above: the occlusion or position, of rest, below the position of full sideway movement.

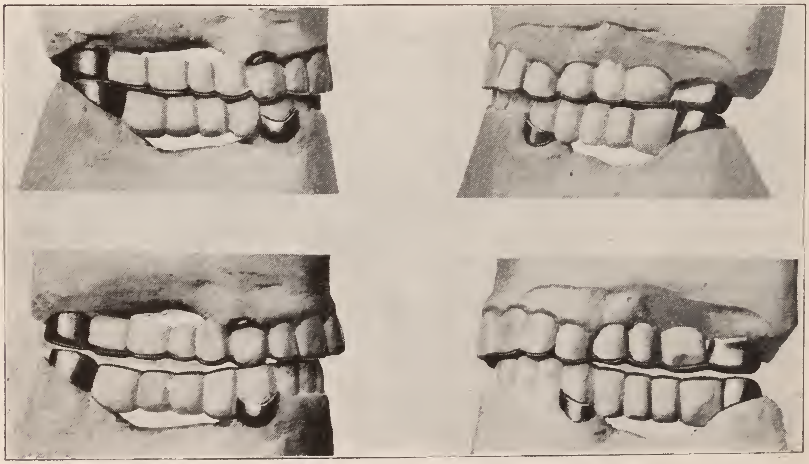

Fig. 2.

Fig. 1 represents one of those rubber plates, which are going round. Its only object is to call to your minds the harmony of contact between the upper and the lower row in lateral excursion.

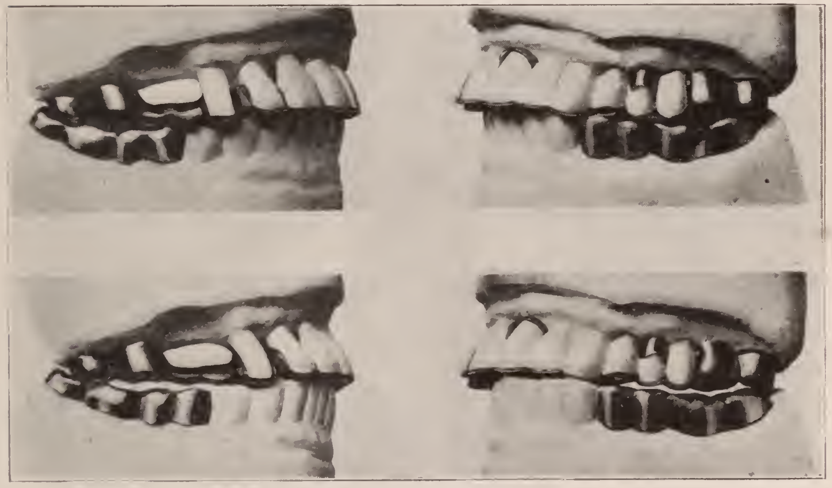

Fig. 3.

Figs 2 and 3 are old bridge cases from my collection. They have been done in former years on hinge articulators, and I show

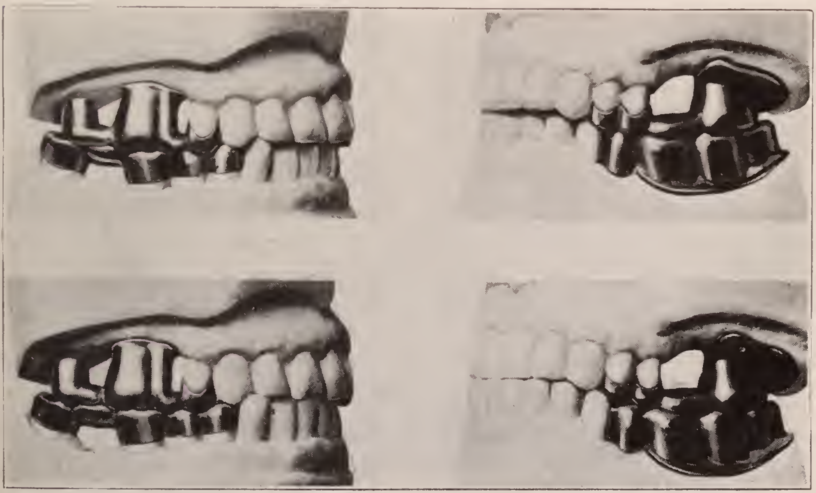

Fig. 4.

them here as examples of how the work should not be done today. The result, you see, is a complete occlusion, which seems to give good service to the patient. But as soon as it comes to masticatory movements the harmony of contact is lost and in full lateral excursion only one or two teeth slide on their antagonists. Bridges of this description will squeeze out the food to a certain extent but

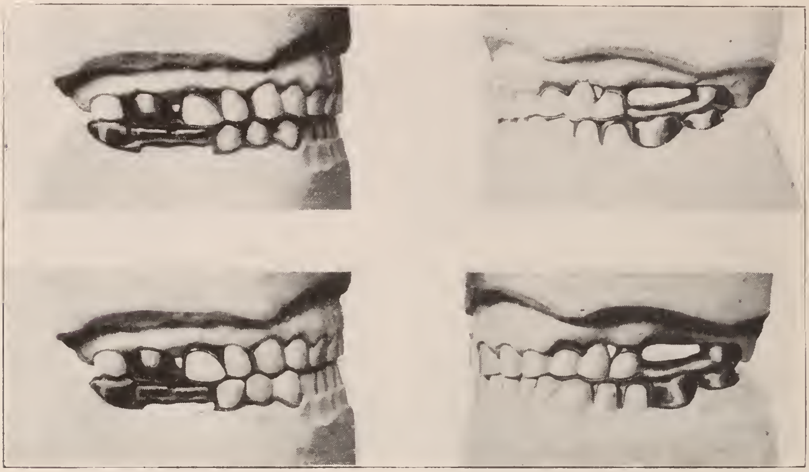

Fig. 5.

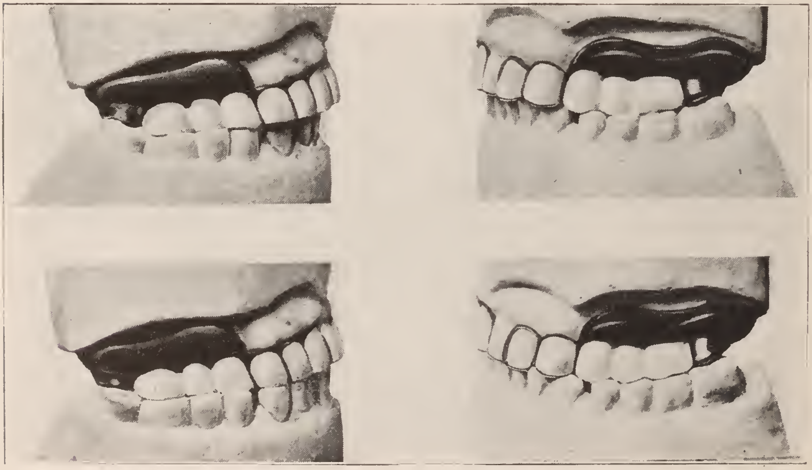

Fig. 6.

they will never crush it, as human teeth should; the patient will never be able to triturate his food as he did when he had his own teeth. Furthermore, the inharmonious distribution of pressure upon the few roots carrying those bridges will sooner or later cause their loosening.

Figs. 4 and 5 show two of these new cases which have been done on Gysi's articulator. Fig. 4 is a case of a man of 60 with good strong roots, but with hardly anything left with which to chew. He now wears four bridges to restore his entire masticating surface. They are set with Harvard cement fourteen months ago. Fig. 5 is a lady of 26, who, by careless treatment of a dentist had lost all the crowns of her teeth except one-third molar and three incisors above and the 6 anterior teeth below. A great number of roots were left, so that her full set of teeth could be restored by two bridges set with cement and quite a number of individual crowns and inlays. It is seven months since this treatment was completed.

You see in both of these cases the harmony of contact and the uniform distribution of pressure in any movement the jaw may perform but, as I said, you will be able to perceive this much better by looking at the models.

Of the next case, I cannot show you a picture, because it was only finished last week. It is a patient wearing a full bridge fixed with cement in the lower jaw and a full removable one in the upper.

You will realize the fundamental importance of using an anatomical articulator in such a case. No full removable bridge could ever withstand unequally distributed pressure on one side of the jaw only, in front only, or in the rear only. If in such a case the pressure of mastication was not uniformly distributed over the entire arch and balanced exactly between the two sides as well as between front and rear, as is impossible without an anatomical articulator, the abutment-rings would be deteriorated in a short time.

Fig. 6 finally is a case of partial plate work which I will show for an example only. It is a case of particularly extreme crossbite, which had been treated without a satisfactory result for several years, and where the difficult problem of a uniform contact has finally been solved by Gysi's articulator.

There is one particular difficulty in executing these bridge-cases in this way. If, for example, we do four bridges, we are forced to do them all at the same time. All the abutment bands, inlays, pivots, saddles, and so forth have to be ready before we take the impressions, so that all the setting up of facings and the building up of articulating surfaces can be done together on the same set of models.

This will mean an inconvenience to the patient, as he will be obliged to be without his teeth for a comparatively long time. But if one can bring him to the point where he understands the importance of doing the work in exactly this way and in no other he will certainly put up with this discomfort for the sake of the final result.

Once he has his bridges in his mouth he will be richly recompensed by the comfort and the usefulness his new teeth will afford him, and he will soon forget how many days he had to wait for them.

Now, gentlemen, you may object that, having shown you cases which are working excellently on the articulator I have failed to prove that they work exactly in the same way when once in the mouth of the patient.

Here you must believe me, and those of my Swiss and French colleagues, to whom I have been able to show the cases in the mouth, when we tell you that the most marvellous part of Gysi's invention consists in the exactness with which his instruments reproduce the conditions found in the mouth.

The mathematical proof for this affirmation consists in the fact that the four cases, which I shall show you, are working in absolutely the same manner in the mouths of the patients as you see them work on the articulator, and that they have done so from the first hour with scarcely any retouching.

This, gentlemen, is the greatest compliment we can pay to the man who has been working so many years in order to elucidate this most complicated problem of the articulation of the human jaw and to give to our profession an appliance exact, simple and strong enough to be of practical value.

It is my greatest pleasure to recommend most heartily to any dentist I meet to get acquainted with Gysi's articulator by telling him that I can accomplish, with the help of this instrument, things which I would never have been able to think of without its knowledge.

THE DIAGNOSIS OF HIDDEN CARIES BY MEANS OF RADIOGRAPHS.*

BY DRS. H. W. C. & C. F. BÖDECKER, BERLIN.

Formerly the radiograph, owing to the primitive apparatus then at our disposal, was used only to locate roots and impacted teeth. The improvements that have been made in recent years, however, enable us to make radiographs clearly showing every detail of the structures even to a marked differentiation between the enamel and the dentin. It has, therefore, become an invaluable aid to dental diagnosis. I am fully convinced that for this purpose the possibilities of the radiograph are far from being exhausted. The oral surgeon simply regards it as a means of ascertaining the condition of the bone or the position of an impacted tooth; to the dental practitioner, it represents only a method of examining the condition of the alveolus or the length of a root. But rarely is the radiograph used to study the tooth itself.

Attention has been called to the fact that the presence of caries can be demonstrated by the use of the Röntgen rays. Valuable as this is, it has not to our knowledge been generally used in practice. In studying our radiographs, we have discovered not only caries at unexpected places, but have also observed a number of other abnormal conditions, for which we prefer to offer no explanation until more material has been collected. I will, however, call attention to these abnormal conditions in some of the following slides.

The diagnosis of caries in its first stages on the proximal surfaces of molars and bicuspids is often difficult, and frequently patients complain of sensation at points where we can not discover caries either with floss silk or explorer. Separation has then to be resorted to, in order to definitely locate the trouble. Sometimes the patient is not able to point out any single tooth in which he notices the sensation, he simply tells us that it is somewhere on that side, and passes his finger over two or three teeth. Another factor which makes diagnosis difficult is reflex sensation. Frequently the irritation is on an upper tooth, and the patient experiences the pain on a lower one, and vice versa. Therefore, to obviate the useless separation of teeth in locating small carious spots, we have used the Röntgen apparatus. It would, nevertheless, be a useless expenditure of time and work to radiograph two or three teeth in the upper arch and if no defect had been found, to repeat the same in the lower. We have, therefore, constructed a film holder by the aid of which the crowns of the bicuspids and molars of one side can be photographed at one time.

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*Read before the American Dental Society of Europe, Dresden, 1911.

The first photograph shown is of the film holder for the right side, to this the film is attached by means of elastics. The holder has a flange at each end. When the holder is in position in the mouth, the posterior flange rests on the occlusal surface of the third molar, or at that place on the gum, while the anterior flange is firmly held between the incisors. The holder, with the attached film, then lies on the lingual surfaces of the upper and lower teeth. It is, therefore, impossible for the patient to dislodge the film with the tongue.

Some of the photographs were made without the holder, and we notice a marked dislocation of the posterior part of the film. Another advantage is that a considerably larger film can be employed by using the holder. The holders must be made for the right and for the left side.

In making the radiograph, care must be taken to project the rays so that the images on the film do not overlap. This is usually possible, unless the teeth are irregular in position. In adjusting the tube, the central ray should therefore lie in the plane of occlusion of the teeth, and pass through the interproximal space between the second biscuspid and the first molar.

Under favorable conditions, and by using the holder we have been able to obtain radiographs showing the upper and lower teeth from the mesial surface of the third molar to the distal surface of the cuspid.

THE TIE MEMBER AND REINFORCED WAX PATTERN IN THE PROCESS OF CASTING.*

BY A. W. TATHAM, D. D. S., DETROIT, MICH.

The process of casting is now thoroughly established and wisely adopted because of its immense advantages over former methods. It has, however, involved certain fundamental difficulties which have limited its field of usefulness. The first of these is the difficulty of drawing wax patterns with definite bands upon roots or definite margins upon inlays, without distortion of the pattern and consequent imperfection of the casting. A second obstacle has been, the uncertainty of procuring outside measurements because of the shrinkage of the metal in cooling and shrinkage of the wax, the casting often not going to place without grinding, which spoils the fine adaptation.

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*Read before the American Dental Society of Europe, Dresden, 1911.

These difficulties which have confronted all operators have been most effectively overcome by a recent discovery. By the use of a fine gold mesh the operator is enabled to place a definite band or margin upon the tooth. The mesh is so pliable that it can readily be formed to the margin of the tooth. Furthermore, it reinforces the wax and avoids distortion of even the finest and most delicate patterns. In the process of casting the mesh is not melted but fuses perfectly with the entering molten gold, making a homogenious mass, which retains the original contour or definite margins and insures both inside and outside measurements.

Under the existing methods of making cast inlays chiefly used in the large bicuspids and molars, it is necessary, practically speaking, to make the casting of the wedge-shaped type so that the pattern can be easily formed and drawn, and so that the shrinkage be taken up by the wedge-shaped formation. But many cases of adaption require compound parts or shoulder formations which militate against and sometimes wholly frustrate the purpose of the purely wedge-shaped type of inlay. By the use of gold mesh in the pattern it is not essential to adhere to the wedge type of filling.

In all fillings and most root measurements where close adaption is required, the majority of fittings and overlapping bands are very difficult to produce and very uncertain, and, even when obtained and cast, fail of exactness because of a slight amount of shrinkage. By the aid of waxed mesh, these bands and margins are easily formed, and when cast, produce a perfect fit.

The uniting of an artificial tooth to a root pattern is admittedly difficult and uncertain. Hence, perhaps the most important feature in this new reinforcement process is the introduction of the "tie member." This is simply and easily accomplished by making a waxed mesh pattern on the root, another on the base of the artificial tooth and joining the two patterns by slightly warming the wax. This constitutes the tie member. Heretofore it has been impossible to join two wax patterns wihout distortion; but the reinforcement of the wax by the mesh renders this not only possible but easy since the wax when slightly warmed can be attached to its component member at any desired angle.

The extreme difficulty of producing by the use of wax alone, definite margins, especially of cervical borders of proximal spaces of bicuspids and molars, is now fully overcome. The wax is placed on both sides of the mesh, the margins of wax remain as definite margins, reinforced by the gold mesh, when burnished with a slightly warm instrument along the borders.

The mesh is not used for an exact adaptation, but merely for reinforcing the wax near the surface of the pattern. The wax is placed on both sides of the mesh and forms the exact adaptation. One of the most attractive features in connection with the use of this mesh for pattern work is that the correction or completion of an adaptation may be effected by re-melting the adaptation surface with a warm spatula, or by adding a slight amount of hot wax. One can readily understand that great pressure can be brought to bear upon the waxed pattern when reinforced by mesh, thereby forming an exact adaptation or die fit—the desideratum.

Gold mesh is most admirably adapted to bridge work. Much of the work in this branch of dentistry must be performed out of the mouth on articulators. The essential requisites are that the missing teeth be assembled, articulated, and changed to suit the bite. Gold mesh is used in the usual manner on any type of dummy teeth now in use. For example: the facing teeth with pins are placed upon one piece of waxed mesh; the pinless porcelain teeth are formed on separate pieces of mesh and then placed in their relative positions upon a strip of waxed mesh. The saddle back or a form for the bicuspids and molars similar to Steele's facing teeth are preferred because of their simplicity of adjustment upon one piece of mesh, as in the facing type. This embedded cloth of gold upon which the teeth are placed, forms the basis for adjustment, and when slightly warmed lends itself to further adjustment for the bite upon the articulator without changing their proper relation. Should there be any disarrangement it can be readily remedied after the articulation has been obtained. It is understood, in the case of facing teeth, that suitable carbon points will be inserted in the holes of the pattern. In all cases porcelain is removed from pattern before casting.

The mesh supplies to the wax the stable element which assures to the pattern a high degree of rigidity; the presence of the wax, when slightly warm, allows the operator to change the articulation quickly, easily and with precision. The wax is not effected by the temperature of the mouth in forming and finishing the pattern on account of this reinforcement.

To summarize: Gold mesh facilitates a wide range of dental operations and opens the way for many others which were not before practicable by the casting process because of the inability to handle delicate wax patterns without distortion; it produces definite bands and margins, which retain their original shape when cast; it is also extremely useful in connection with crowns and bridges, always insuring a perfect and rapid adjustment. A marked feature of the entire process is its simplicity of technique.

GOOD DENTISTRY OR BAD DENTISTRY—WHICH SHALL IT BE?

BY EDWARD H. BAKER, M. D., CHICAGO.

When a body of men, drawn together by common interests, and actuated by a common esprit de corps, is attacked by an enemy, the first question that arises is, how strong is the enemy?

But this is not the question of real importance. The qeustion of real importance is the one which arises secondly in the mind. How strong are our own forces? Is our position impregnable?

I propose to show in this paper some of the dangers that beset the dental profession from within. In my last article[1], I pointed out the strength of the enemy (Public Opinion). In this article I shall show the probable mode of attack (unless the dentist awakens, and makes the first move; for it is always safer to "see the other fellow first").

Before going on, let me recall again some statements in my last article. I am a friend of dentistry, because I believe the mouth fulfills an office of unique and paramount importance in the human body. I believe that anything which casts public discredit upon the dental profession would be a calamity, not only to dentists as individuals, but to the whole human race as well. Hence, I hope that my words will be taken as those of a friendly and not too officious adviser, rather than of a busybody or troublemaker. It is only because I believe that this journal is read almost exclusively by members of the dental profession that I have ventured to express myself as freely as I have.

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[1] See DENTAL REVIEW, March, 1912.

WEAKNESS OF THE DENTAL PROFESSION.

The greatest weakness of the dental profession today is

1. Bad dentistry.
2. Lack of facts and data showing the value of proper dental service.

BAD DENTISTRY.

I have recently had occasion to collect facts about mechanical dentistry, as material for some medical articles and addresses, intended to show the importance of good dental service.

In looking over some hundreds of skiagraphs of the teeth, selected at random, I was struck by the fact that among the whole number I found very few shell-crowns which fitted the neck of the tooth even approximately. And when it came to natural contours or normal contacts, well, the less said the better.

Now it must be evident to every thoughtful person that the constant absorption of poisons from putrid food material is harmful and dangerous to the body. That there is great danger in the presence of septic foci within the mouth, containing millions of bacteria which are constantly fed into the system, either by absorption or by swallowing, only awaiting the moment when the raising of the fatigue-index of the body[2] will enable the bacteria to overcome the specific resistance of the body. That the constant absorption of pus is deleterious and that pyorrhea should be prevented wherever possible. That the loss of good teeth through absorption of the roots or by decay, is a great bodily misfortune.

Yet no one can look at the pictures of those crowns without realizing that these are factors which are producing just the results we have said were undesirable.

It is because of Dr. William Hunter's medical article[3] widely published and widely read, that I have ventured to call attention to one of the great and evident dangers which threatens the standing and prosperity of the dental profession today.

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[2] See author's article in DENTAL REVIEW, January, 1912, pp. 10-16.

[3] See references in my last article, DENTAL REVIEW, March, 1912.

HOW THE DENTAL PROFESSION CAN ESCAPE FROM AN EMBARRRASSING POSITION.

While there can be little doubt that most men in the profession realize the value of a normal contact, to attain it is another question. Contours should also be natural. When one considers the difficulties of fitting a band properly in addition to the other demands upon mechanical skill and patience, it is evident that while a few men, perhaps four or five dentists in one hundred, may succeed admirably in making a one-piece swaged telescope-crown, which has proper contacts, contours, and fits the neck of the tooth to a nicety, not many will obtain a satisfactory result even with a two-piece crown. It is probably more feasible to abandon this older method and depend upon fitting a band first, carving a wax model, and casting the crown upon the band. Even an indifferent operator may, by the exercise of time and patience, thus construct a solid and satisfactory artificial crown which will be as nearly food-proof and bacteria-proof as it is feasible to make it.

I find that even men who can make and fit a fine shell-crown are turning to the quicker and easier method of casting, which, while it takes a little more gold, is apt to be more satisfactory in the end.

Hence, it appears that the abandonment of the old, deadly shell-crown and the careful preparation of the root will at one sweep do away with most of the causes of bad dentistry (see list below).

Hence, it seems to me that it will now be possible to inaugurate a movement for Good Dentistry, in which all the reputable men in the profession can join.

At present, this is rendered difficult by the fact that the public has no knowledge of the mechanical facts underlying good dentistry. Hence, the dentist finds it difficult and almost impossible to enlighten patients as to the truth about ill-fitting gold crowns (especially when placed there by a reputable brother dentist).

One remedy for this difficulty is for each dentist to prepare an educational exhibit for patients. Besides a dozen or more radiographs, the dentist can have a model or "clinic," showing an ill-fitting crown and its results, together with a properly made crown, showing proper contacts and contours. He can show these to patients, when discussing the work, explaining the course of events which usually follow poor work.

Show to the patient a ready-made gold shell or thimble. Explain that it can be purchased for 75c to $1.50, according to size. Explain that by omitting devitalizing and only removing a little of the enamel, it can be set complete in fifteen to thirty minutes.

Explain that a quack dentist can make more money by setting such a crown in one-half hour for $5.00 than he can by spending the time to prepare a cavity and fill at the regular price.

Let the patient know that a carefully made and fitted crown with careful surgical preparation of root means an expenditure of from six to ten hours' time. The patient will then see why you must be paid for your good work more than he would a poor dentist for cheap work, and why it is worth the difference.

More than this, when your patient begins to read or hear about bad dentistry, he knows all about it. "Yes, my dentist explained all about it." He says, "etc., etc." Your fortune is made in that town, whether the powder barrel (over which dentistry is living today) ever blows up or not.

If you have already broached the facts, they will never believe you are one of the offenders. You are one of the "good" dentists now and evermore.

I believe that when patients understand the situation, they will be only too glad to pay a good fee for careful conscientious work. And unless the dentist is an unusually poor operator, he should find his services in greater demand and at much higher fees than formerly.

PRINCIPAL FACTORS OF BAD DENTAL WORK.

1. Ill-fitting bands.
2. Such imperfect work as will allow food to crowd in and form pockets.
3. Loss of proximal contact.
4. Too close impingement of band on peridental membrane.
5. Careless surgical preparation.

6. Lacerations of gingival margin, and its replacement by a mass of scar-tissue with poor circulation and low resisting-power.

   The gingival margin is normally supplied with an anastomosis of the blood vessels and lymphatics from the apex of the tooth on one side and from the mucous membrane of the gums on the other side. When this free blood supply (with its consequent protective power) is replaced by a very limited supply, bacterial and mechanical attacks soon make inroads upon the margin of the gingiva, recession occurs, and pockets form.

In conclusion, there can be little doubt that a great danger threatens the dental profession at the present moment. A policy of inaction at the present time is not a safe policy.

I would suggest that a new movement be inaugurated, a movement to separate the sheep from the goats, by raising the banner of Good Dentistry.

Those who sympathize with this aim will, I believe, welcome such a solution of the problem. Dentistry is today like a ship, manned by honest men, which has, as in all new sciences, steered its course in the past as carefully as possible over hidden shoals.

But now the time has arrived when the casting process has made good work possible by men of even mediocre ability, if they are honest and take time and patience and are willing to spend a couple of dollars more for gold.

This opens a safe channel in crown and bridge work where there are no rapids and no reefs. The searchlight of public opinion is likely to be flashed over the scene at any moment. May it find dentistry in the safe channel rather than shipwrecked upon a snag.

PROCEEDINGS OF SOCIETIES.

THE AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT DRESDEN, JULY, 1911.

DISCUSSION OF PAPER BY DR. HERBERT H. BETHEL ON "AN APPLIANCE TO ASSIST BREATHING IN OBTURATOR CASES."

Dr. W. Hirschfeld (Paris)

said the idea appeared to him to be a very original one, and he should like to know the right name of the appliance.

Dr. Bethel

said he had called it a Respirator. The idea of making the tubes spiral was simply to assist in the articulation of certain sounds. He had thought that if the tube were made perfectly straight through the obturator there would be too great a tendency for the air to rush through in the pronunciation of certain letters, whereas with a spiral the air was spread out and struck on a metallic surface and so reflected. In the case of a letter like M, where the lips were closed and the air had to circulate through the nose, the air was allowed to circulate around the disc very slowly.

Dr. Hirschfeld

asked whether the idea was an absolutely original one.

Dr. Bethel

said he did not know. The lady came to him and asked him to help her, and he worked the thing out. The necessity was put upon him of helping the lady to breathe through the nose. Being a married woman, she found it somewhat embarrassing to take out the obturator at night, and also she found it hard to breathe at night, as she had got into the habit of breathing through her nose, and with the obturator out at night she involuntarily closed her mouth. With the little arrangement he had described she was able to keep the obturator in at night and obtain sufficient air through the respirator to satisfy the lung capacity. He had arranged a little slide which she could work with her finger. The instrument could be put under the water-tap and made perfectly clean.

Dr. H. W. C. Bödecker

said he had seen a considerable number of obturators and mechanical devices for assisting the passage of air, but he had never seen anything which showed such mechanical genius and offered such great chances of success as the little mechanism produced by Dr. Bethel. Most commonly such apparatuses were made of gutta percha, or rubber, and a patient had to carry a whole stock of leaflets for repair; they became softened, food got into them, and they had to be replaced.

THE PRESIDENT

said he so thoroughly appreciated the appliance that he almost forced Dr. Bethel to come and explain it to the Society. It was the best mechanical appliance he had ever seen on the market.

DR. W. S. DAVENPORT

said that in all the experience he had had with obturators he had never seen any necessity for a special arrangement for breathing or enunciation. He was sure a patient could be taught to enunciate, and it seemed to him a hole in the position in which it was shown in the respirator was in a very abnormal region; but no doubt it would work out in practice. He had in his possession Kingsley's obturator, and he found that if it was extended back too far to interfere with the normal breathing it would touch the back of the palate and prove very inconvenient for the patient.

DR. HIRSCHFELD

pointed out that the apparatus was made to meet a special case.

DR. F. F. ROBINSON

thought the appliance a very ingenious one, and beautifully executed.

DR. BETHEL

said the sound of the letters of the alphabet was carefully gone over, as far as it could be proved in wax, and he got the lady to pronounce the various sounds of the German and English language, with a little of French. She had complained that she had been unable to pronounce certain letters correctly. The question was a very important one, as the lady frequented very good society, and it was embarrassing to her to have such an unfortunate physical defect.

DISCUSSION OF THE PAPER BY DR. THIERSCH ON "THE USE OF GYSI'S ARTICULATOR."

DR. W. S. DAVENPORT

said the Society had been afforded an opportunity on several occasions of seeing the wonderful work done by Dr. Thiersch, who seemed to be working from the ideal point of view which appealed to all. In the paper Dr. Thiersch quoted certain observations, among them being expressions of his own made ten years ago with regard to bridge construction, and he might say he had not had any reason to change his opinion in the slightest degree. He had asked many questions of Dr. Thiersch in the endeavor to find some weak points, but it was absolutely impossible to do so, as Dr. Thiersch had brought forward the weak points himself. He thought the work was going to be of very great benefit to the profession in the future by showing the failures which were thought at first to be successes. Some years ago he had said that successful bridge work depended more upon good articulation than on anything else, and at that time he was trying to develop a system of making bridges easily and simply, and he found the only way he could do so with a few anchors was first to establish perfect articulation. In that way he found the bridge work would last for years, even when on delicate roots. He could not find any bad engineering in Dr. Thiersch's work, and the only criticism he could mention was the lack in many cases of the artistic element; but it was often necessary to sacrifice the artistic to the engineering side of the problem. He had had some experience with the Gysi articulators, and did not quite feel towards them as Dr. Thiersch did. Like all mechanical articulators they were very delicately made; the screws easily worked loose and gave a great deal of trouble in his own laboratory, and he had had to remake work on account of the weak construction of the articulator. In the establishment of curves he had found it wonderfully interesting to be able to get the heights approximately established; he did not believe it was possible to establish them accurately. The swinging curves could be recorded on the paper, and it was possible to work more accurately with them than with anything else. In making artificial sets, he could not establish the curves of inclinations, and therefore in a rather young person of 30 it seemed to him impossible not to have a successive curve of the arches. Gysi had carried the articulator to a great degree of practicability in the making of sets for old people, where the teeth shut in front, but in any attempt to get a little over-biting he had had a difficulty in not getting too much curve.

Dr. O. Solbrig (Paris)

said he admired Dr. Thiersch's enthusiasm and the Society owed him a great deal of thanks for bringing forward the articulator. The models shown were wonderfully good and educational, and an examination of them convinced him of the truth Dr. Thiersch brought forward. Even in single crowns the normal occlusion ought to be applied. It had happened to all to make crowns with a beautiful grinding surface, but the crown might not be quite comfortable for a day or two, or even longer. In that short time it was not possible to have the gold worn properly down, and a little adjustment might require to be made. The real articulator was nature. By constructing a crown and inserting some wax in the band, and allowing the person to bite upon it, a surface was obtained in which the fissures could be carved, and in that way one obtained the benefit of the natural articulation of the jaw without the use of any artificial articulator. He agreed with everything Dr. Thiersch had said, but especially with regard to bridges anchored at one side with a loose joint at the other. With bridges of that kind, if there was not perfect articulation, something would go wrong in the loose joint. Still, he believed it was the only physiological bridge that should be inserted. He did not believe in having two fixed anchorages, and thus making the bridge too rigid.

Dr. H. W. C. Bödecker (Berlin)

said it was not necessary for him to emphasize again the perfect articulation obtained with Gysi's articulator, but he should like to say a few words about articulation and what was being aimed at. Dr. Thiersch had stated that the path of the condyles was partially determined by heredity and race. That was so in the normal jaw when the child was born, but as soon as one tooth was lost the path of the condyle changed. As soon as a patient had two or three cavities or a painful tooth at one side of the mouth, the anatomical relations of the fossae changed. The orthodontist could very easily change the position of the jaw. It was well known that after a time patients would become accustomed to very poorly articulated sets of teeth, and that was only explicable by the fact that the fossae adapted themselves to new conditions. The change began with the loss of the first tooth, and much depended upon which side of the mouth the first tooth was lost. On one side there would be a normal fossae and on the other side an abnormal one. If the patient lost all the teeth, or all the cusps were ground off, a pair of plates could be put in. Taking a case where the teeth were slowly lost and nothing was left but two or three teeth on one side, one fossa had no work, and it was therefore not natural to suppose that the two fossae would be equal. The valuable point in the Gysi articulator was that it measured and reproduced the conditions of those fossae, and thus a denture could be made which fitted the curvature and the conditions. It allowed the articulation to be made to fit the fossae, instead of the fossae being made to fit with a cam. If the teeth articulated correctly according to the conditions in the fossae, there would be an equal distribution of pressure over the whole surface of the bridge, and there would be so such case as one abutment carrying the whole weight of the bridge.

PROFESSOR W. BEBB (Los Angeles)

said possibly the great success of Dr. Thiersch's work was due to the particular skill of the man in charge. With one less skillful the results probably would not be obtained. Dr. Bödecker had referred to teeth that were ground down until they were perfectly flat, a thing that occurred amongst certain races and certain classes of people. If a bridge was constructed on an articulator such as had been shown, and the teeth bridged wore down naturally as the natural teeth on the opposite side, there must be produced a relation which would be entirely abnormal to that intended to be produced by the articulator. In America, a great many Spaniards had teeth ground down in that way, because they ate largely of food mixed with sand and stone ground from the mortars.

DR. E. A. BOGUE (New York)

said Dr. McBride had an idea some years ago that the tempero-maxillary articulation was changed with time, and he had come to the conclusion that Dr. McBride was right. With regard to the Spaniards and Indians who ate home ground grain and whose teeth rapidly wore away, he was reminded of a little incident which was apropos to the discussion. At a meeting in America a discussion occurred on articulation, and one gentleman brought with him a professor from the Museum of Natural History. He (Dr. Bogue) made a statement which might seem heretical, that if there were perfect articulation of all 32 teeth—and that was what was being aimed at in the Gysi articulator—there would be a uniform wear of cusps and sulsi, so that at 60 or 70 years of age there would be a grinding surface on the teeth above and below, the teeth would articulate with each other and would still triturate substantially as in youth. Unfortunately, one had to deal with conditions that were not ideal. The patient would go to some physician and have a tooth extracted here and another one there, and the articulation was broken up. Then his opponent at the American meeting brought forward the fact that he had examined 500 specimens and found that all of them had been worn down at the sides and the ends of the cusps, so that none of them articulated properly. They were almost reduced to a flat surface. He (Dr. Bogue) replied that that was quite true, but that it had to be remembered that nineteen out of twenty, and perhaps ninety-nine out of a hundred specimens were not perfectly regulated. So far as the Gysi articulator was concerned he had personally the highest respect for it, but it was impossible entirely to confine oneself to a mechanical instrument to assist in doing one's thinking.

Dr. W. Thiersch

said the manufacturers of the articulator had received objections to the two screws not being strong enough and that stock of articulators was not now being sold, and a second edition was about to be furnished with stronger and better screws. With reference to Dr. Davenport's remarks about young persons and being obliged to make a compensatory curve round the teeth in making an overbite, that was a difficulty with which Dr. Gysi in the theoretical part of his work dealt very completely, and he had come to the conclusion that it was more practicable with full plates not to have a very great overbite, but to have a short overbite, and not a very deep compensating curve. For cases in which a short overbite was needed he had obtained a compensatory curve without making it too deep. In obtaining his slight compensatory curve he only used two molars and by placing the second molar considerably higher than the first one and thus having a difference in the level of the two teeth, he obtained the compensation which ought to be obtained by the complete curve. It was not an ideal way, but it was a scheme to obtain the best compensatory curve. With regard to Dr. Solbrig's remarks, it had been often said that the best anatomical articulator was the human mouth—make a bridge, put it in the mouth, let the patient bite, and then see what should be changed. It would not, of course, be worth using the articulator for a single crown. With regard to the method of using the human mouth as an articulator, in a large number of cases something might be done in that way, but only by empiricism. By the Gysi articulator one dealt with the matter in a rational way. With regard to Dr. Bödecker's remarks, it was quite true that the surface of the fossae accommodated itself to an artificial substitute, and many patients who wore badly made plates felt in time quite comfortable, but one of the advantages of Gysi's instrument was that one could establish the exact condition of the mouth and construct an appliance which would best suit the mouth and give the patient the most comfort immediately.

CHICAGO DENTAL SOCIETY.

A special meeting was held January 22, 1912, with the President, Dr. G. W. Dittmar, in the chair.

Dr. J. P. Buckley, on behalf of the local members of the profession, welcomed the visiting dentists to Chicago.

Dr. William E. Bebb of Los Angeles, California, was then introduced by the President, and gave a talk on "Pathologic Conditions Found in Human and Animal Crania," which was illustrated by numerous stereopticon slides.

Dr. Hart J. Goslee:

After this most delightful and instructive talk by Dr. Bebb I do not think Chicago would be true to itself unless a few words of a certain nature were said to our distinguished guest from the Pacific Coast, and I know of no one more competent to make that little address than the gentleman I am going to call upon, and there is no one more deserving of the compliment than Dr. Bebb. I am going to call upon Dr. C. N. Johnson to convey to Dr. Bebb a few words of appreciation of this society for his efforts tonight.

Dr. C. N. Johnson:

Dr. Bebb, my duty tonight is an extremely pleasant one; at the same time it is embarrassing, for the reason that I have not had an opportunity to make any preparation whatever to perform the function that has been allotted to me on this occasion. It is unnecessary for me to say anything to this audience regarding the scientific attainments of the gentleman to whom you have just listened. If nothing else he has done in the world was on record, the presentation that he has given to us this evening would be sufficient to stamp him as a scientific man.

Now, Mr. President, the Chicago Dental Society appreciating the honor that Dr. Bebb has conferred upon it, wishes me, in its behalf, to present to him a slight testimonial in recognition of his services to the profession. Our President, in introducing Dr. Bebb tonight, called him a scientific gentleman. Tonight, Dr. Bebb, I am going to speak to you not as a scientific gentleman, but as a friend, and a man and a gentleman. If you all knew Dr. Bebb as well as I do you would have a very lofty opinion of him. What impressed me more, perhaps, than anything else in his scientific attitude towards this subject, was its humanitarian aspect. Dr. Bebb is one of the most lovable men I have ever known and, Mr. President, it is my privilege to know very many lovable men in our profession. I think some of the very best men in the world are in the dental profession. One of the best men in the dental profession is here tonight, and you have just listened to him.

Dr. Bebb, the Chicago Dental Society has assigned to me the honor and the very great pleasure of presenting to you on this occasion this slight testimonial. I am going to read it and then present it to you.

"At a regular meeting of the Chicago Dental Society, held in Chicago, Illinois, January 22, 1912, it was unanimously resolved that a special tribute be paid to William E. Bebb, in recognition of his professional attainments, and especially of his splendid achievements in comparative odontology, and as an evidence of appreciation by this society of his valuable contributions to scientific dentistry." This testimonial is signed by the President and Secretary of the Chicago Dental Society. And on behalf of the society, Dr. Bebb, I ask you to accept this tribute to take home with you, not because of its intrinsic value but because it will remind you as long as you live and we live of the cordial sentiments existing between you and the Chicago Dental Society.

Dr. Bebb:

Mr. President and gentlemen, I thank you.

DISCUSSION ON THE PAPER OF DR. BEBB.

Dr. Martin Dewey, Kansas City, Missouri:

Mr. President and Members of the Chicago Dental Society: After seeing the beautiful pictures which Dr. Bebb has exhibited this evening I know it must be an awful drop to return to cold realities in considering the subject of comparative dental anatomy. However, there is probably no subject in which I am more interested, and likewise Dr. Bebb, and I believe there is no subject which has a greater bearing on dentistry.

There are certain problems in dentistry which can only be understood by going back and taking them up from comparative odontology. The question of the evolution of human teeth cannot possibly be understood unless we take the various changes that take place by studying the teeth of lower animals. Therefore, if dentistry is ever to be made a scientific subject, which we hope it will be, and applied as it should be, more attention must be paid to comparative dental anatomy and to the foundations upon which we must build.

Dr. Bebb has called our attention to a certain phase of this subject and that is the question of rickets in captive animals. He also mentioned the fact of the effect which rickets had upon the human family as in cases of malocclusion. I agree with him in saying that a great many cases of malocclusion have had their start in rickets. There are certain symptoms which appear very early in life which are suggestive of rickets. You have all seen cases in which the deciduous teeth were lost prematurely; that is, for some cause or other, the roots were absorbed and the teeth lost. We all know that the early loss of the deciduous teeth is conducive to malocclusion. It has been proved that the early loss of the deciduous teeth is one of the early symptoms of rickets. We can go back farther than that. When a child is late in cutting its teeth or in erupting the deciduous teeth, you can be suspicious of rickets. Rickets is a disease of the bones caused by the absence or faulty deposit of calcareous substances, and if the constitutional effect of rickets is present the teeth will not erupt. If they do erupt there is a crying out for the salts, and in some infants the roots are absorbed prematurely, and then we have the condition further complicated by the fact that the permanent teeth make their appearance late. These various changees sometimes produce one of the worst types of malocclusion possible, and if the condition exists still further, if you attempt to regulate these teeth, you will be surprised at the ease with which they are moved; likewise, you will be disgusted with the ease with which they move back. So you can see we have to look further than a simple malocclusion of the teeth as a cause.

Dr. Bebb referred to the dentition of rodents. Rodent dentition consists of scalpiform incisors which grow from persistent pulps. The rodents found in Madagascar and in Australia may not have these characteristics so well developed, nevertheless you find in Madagascar that the little monkey does develop an incisor that is scalpiformed. You find also that the marsupial develop these scalpiform incisors from persistent growth. What effect has that on dentistry? Simply this: We have in widely varying districts different animals which have developed a dentition which is similar to our own. So, you see, there are certain laws and forces laid down in the teeth of lower animals which are laid down in man. There are certain laws of occlusion which can only be understood by studying the teeth of the lower animals. If we go a little further you will remember that the teeth have been evolved originally from a plicoid skull, made up of conical teeth, which in the fish are modified, being either a long or slender cone, or a flat cone, but still they are conical teeth in which we simply have occlusion of the tooth-bearing surface. If we follow on higher, in the reptiles, you will find the number of teeth have diminished; that nature has not only evolved certain methods of tooth attachment, but she has evolved certain types of teeth which begin to have definite forms of occlusion, and you notice that in the reptiles whose teeth occlude in rows. If we pass on from these reptiles to some of the more modern reptiles we begin to find a higher state of development in which we have occlusion of the teeth. The armadillo is one of that particular type and yet we have no cusps to play a part in the occlusion of the teeth. As we pass on from these we have occlusion of the cusps, and eventually we get to the teeth of man. And so the teeth have been evolved through a series of evolutionary changes.

I have a few slides which I wish to show you if you will bear with me a little longer.

Dr. Thomas B. Hartzell, Minneapolis, Minnesota:

I am delighted to be here this evening. When I received an invitation to come to Chicago and discuss the paper of Dr. Bebb I responded that if it were possible for me to leave my home I would be delighted to do so, not only because I feel that Chicago is a sort of hub of the universe so far as dentistry is concerned, but because I wanted to meet Dr. Bebb. I made one condition or stipulation, however, and that was that I was to be furnished an outline or copy of the paper which I was to discuss, because I have a good deal of dislike to appear before an audience to discuss a paper or to talk on a subject and be illy prepared. It is an infliction upon the society and it is somewhat distressing to one to be put in that position. I received Dr. Bebb's paper just as I was about to leave for the train, and I found it was devoted to teaching comparative dental anatomy and not to the subject which is named in the invitation, having to do with pathology. I suspected at once that the invitation was intended for my sister, who teaches comparative dental anatomy and who has done so for several years.

I am not going to try to utter any fulsome praise regarding Dr Bebb and his work. He evidently has the true scientific spirit. A man who will bring one hundred and thirty specimens of the same type for the purpose of having a sufficient number in order that he may judge of the developmental conditions in their true light, has the true German scientific spirit, and the Germans are the Greeks of modern literature and of scientific research.

I had the pleasure of teaching comparative anatomy some fifteen years ago and found it a very interesting subject. The development of the teeth is a direct response to the demand made upon the individual by his environment. I am not going to attempt to repeat or to comment upon many of the known facts that have been brought out here this evening. I do feel, however, that there are one or two thoughts that may be drawn of a purely pathological nature from a consideration of this subject, and I will speak of one or two of those thoughts and then cease, because I know you are all anxious to go home and rest up for tomorrow.

The greatest subject before the dental profession today is the conservation of the alveolar process. You gentlemen in Chicago and in other centers of dental development have practically crystallized operative dentistry. You have crystallized prosthetic dentistry. More will probably be added but it will be comparatively slight as compared to what has already been done. It is needless for me to continue that thought further. The clinics of tomorrow will demonstrate it and if you have not come to that conclusion already you will by tomorrow night. But we have much to learn regarding the conservation of the alveolar process. It does not matter how beautiful, how excellent the work you do upon the teeth themselves, if you lose the alveolar process you have finished the story. Now then, the alveolar process is the most transient bony tissue of the body. It is developed after birth, built up with deciduous teeth, torn down when they are lost, built up a second time with the so-called permanent teeth, and it responds in a manner that is directly damaging to it from the slightest of irritating stimuli. The consequence is we lose the alveolar process in our jaws much more rapidly than we do any other of our bony tissues. I have devoted a good portion of my late years of professional work in studying methods of conserving the alveolar process, because I think if we could find some way of preventing the loss of the alveolar process, there would practically be no reason why any individual should lose his teeth. It is very seldom that we see people upwards of ninety years of age with all of their teeth in position. I have two or three patients upwards of ninety years of age who have half of the teeth in position, but very seldom do we find an individual who is above seventy who has any great number of his natural teeth. The great majority of people lose them. Why? Not because we cannot make good crowns, not because we cannot repair the ravages of caries, but because we lose the alveolar process; therefore the conservation of this process ought to occupy the minds of the profession very much more than the beautiful methods which we have of repairing loss of tissue in the teeth themselves.

I drew a lesson from the study of Dr. Bebb's collection, in view of the fact that there was no set paper to discuss. I visited him in his laboratory and assisted him in unwrapping the specimens. I studied these specimens as much as I could in the limited time at my disposal and I noticed that these cat specimens, where the animals were kept in confinement, showed a distinct loss of the alveolar process, and some of the teeth also show caries or a distinct loss of tooth structure, as well as a loss of the alveolar process. Only the animals that were in captivity showed this loss, while those in freedom did not show this loss of the alveolar process.

Some years ago I made the statement before the National Dental Association that the destruction of the alveolar process was in the last analysis circulatory, and the statement was made by some one this afternoon that the loss of bone of these captives was perhaps due to the different character of food given them in captivity. Dr. Bebb said in reply that the food was practically the same as in freedom; therefore the condition found tallies with the idea that the loss of the alveolar process is a circulatory defect, and it is because the animal does not have the exercise that it had under normal conditions. The reason why the cat shows this loss of the alveolar process is that in captivity it will remain quiet and exercise comparatively little; captive monkeys do not show the loss of the alveolar process because they keep up vigorous exercise. If any of you have observed them in captivity you will note that they are constantly in motion. You may ask what deduction am I going to draw from this series of statements. From such widely diversified sources of information and of facts we can draw deductions that really may teach something.

I was reading Darwin's "Origin of Species" the other day and he said relative to the growth of clover near the cities of England, that it made much better seed in the neighborhood of cities because they had cats in cities. How are we going to correlate such a statement as that? Briefly, it is because in cities we have cats which destroy mice, and mice are enemies to the bumble bee, and the bumble bee lives in clover fields and is absolutely necessary to the fertilization of the clover blossom. Where cats exist the mice are destroyed and in Australia they could not raise clover until they imported the bumble bee.

Now I wish to draw a deduction here in regard to the circulation which may seem to some of you just as far-fetched, namely, whenever you have anything which interferes with the elimination of waste, whenever you check the circulation in the end tissues that push against the teeth, you block the vessels. You have the peridental membrane fed by vessels that pass through bone to supply it, and the minute you have inflammation there from any source, whether from disuse or lack of exercise, or from failure of elimination of irritants from the blood, or from a traumatic irritant—it does not make any difference which—you will set up a circulatory difficulty in the neighborhood of the tissues fed by the end capillaries. When you do that, what happens to the capillaries that pass down to supply the peridental membrane? Just this: they swell shut because they are contained in the bone, therefore nature tears down the bone to accommodate the vessels.

I have drawn that lesson from the specimens shown and statements made by Dr. Bebb because they tally with the theory I have explained.

I saw two or three other things in this collection. If you go there tomorrow you will find one or two skulls that show a deposit of new bone around the necks of teeth which have lost alveolar edges, a condensing osteitis that supervened upon a rarifying osteitis around the necks of the teeth. We are told that never happens but it did happen in these skulls, and you will find a layer of bone built out upon the surface of bone in one of the specimens showing that there is such a condition as the strengthening of the process under certain conditions.

Dr. Bebb (closing the discussion):

Again I desire to thank you for your many kindnesses to me this evening. In closing I wish to say to any of you who may desire to examine the specimens which will be on exhibition tomorrow that I hope you will feel perfectly free to ask me any questions which you may choose and I will answer them to the best of my ability.

CHICAGO DENTAL SOCIETY.

A regular meeting was held January 23, 1912, with the President, Dr. G. W. Dittmar, in the chair.

Dr. C. N. Johnson welcomed the visiting dentists to Chicago on behalf of the society.

Dr. E. A. Johnson of Boston exhibited slides of the model and plans of the Forsyth Dental Infirmary, now under construction in Boston. He explained the model and plans of this unique institution and said that comparatively few dentists were familiar with the history of this two million dollar donation, given by the Forsyth brothers to establish a free dental infirmary for the poor children of Boston and vicinity.

Dr. G. V. Black then read a paper entitled "Deposits of Salivary Calculus."

DISCUSSION.

Dr. Frank W. Low, Buffalo, N. Y.:

First, I want to make acknowledgment for the great honor conferred upon me by your Program Committee in inviting me to come to Chicago; and second, for the greater honor of inviting me to open the discussion on Dr. Black's paper.

In the East—by inference at least—I have recently been accused of giving some pretty loose, unscientific talks regarding research work. Well! it is quite likely that I shall indulge in some more of that same kind of talk tonight, because by an unlucky chain of circumstances for which I suppose no one is to blame I did not see a copy of Dr. Black's paper and so I have to make my discussion extemporaneously. However, I do not think it will make very much difference. Until I had a talk with Dr. Black tonight just before this meeting I most firmly believed that the thing which makes the plaque of decay, which in practice I find always most abundant in the presence of a thick, ropy, and as I believe a *strongly alkaline* saliva, was the same substance as that which Dr. Black has discovered to be always underlying all calculus formations. But I have changed my mind. Perhaps if I were to make some experiments in this direction I would change my mind back again.[1]

I cannot say anything of very great value with regard to the study of calculus because I have never made any experiments relating to it. I sit up as late at night as anybody else but I have to work at almost disheartening disadvantage because I have no chemical knowledge. I am one of the old type of dentists who did not get much chemistry in his student days and consequently I have to rely on what others say. But the trouble with the work that has been done in the East has been that we have had too expert biologists and not enough supervision by the dentist who in active practice sees the conditions in the mouth as they really are.

Professor Gies of New York has made some studies and drawn some conclusions which he has reported in the *Journal of the Allied Societies,* which convinced me that he does not know what he is looking at. He reports, for instance, that there is no connection between the amount of potassium sulphocyanate present in the saliva as related to a condition of rapid superficial enamel decay, but he has grouped erosion, the slow, dark brown decay, and rapid enamel decay, together. (But we will not discuss potassium sulphocyanate tonight.)

I want to say that I antedated Dr. Black in recommending that the essential ingredient of a good mouth wash is good wet water.

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[1] Note.—The next day after the discussion of Dr. Black's paper I was given an opportunity to examine all the specimens from which the microphotographs were made that Dr. Black used in illustrating his paper. In consequence I am thoroughly converted to Dr. Black's opinion that the "Gelatinoid Plaque" and the "agglutinating material" which underlies salivary deposits are in no way analogous.

(Laughter.) He may have known it before, but I was the first to publish it.[2]

Dr. Black:

I am glad of it.

Dr. Low:

I allow patients to clean their teeth with any antiseptic they may choose if they will only make the solution dilute enough, believing that so little of the mouth wash does no harm while it may help to keep the brush clean. The rest of it is all placebo. If a woman comes to me and asks whether she can continue the use of glyco-thymoline as a mouth wash I do not hesitate to tell her yes, provided that I see she has healthy gums, but I caution her not to use heavily tinctured washes.

Dr. Black has spoken to you about prophylaxis. There is such

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[2] In a paper read before the Union Convention of the fifth district and the Jefferson County Dental Societies of the state of New York at Watertown, N. Y., December 9, 1910.

Notes from a lecture which I have been delivering for the past two years to the senior classes of the dental department of Buffalo University.

"To the man who 'pays the freight' my bills invariably demonstrate that frequent prophylaxis treatment is a practice of true economy. I am very willing to admit that it cannot be gainsaid that there is such a thing as Prophylaxis Prohibitive.

"Between the care by the dentist and the care at home, there must be some individuals like the soldier who said he 'had no time for marching or fighting because it took him all the time to clean his gun.'

"Some clinics that I have recently witnessed and some papers that I have heard read suggest the possibility that the man who pays the freight might have hard work to persuade himself 'that frequent prophylaxis treatment *was* a practice of true economy.'

"Prophylaxis prohibitive, it is quite true, will render the teeth fairly fit for future fulsomely flattering exhibit, but who cares to loan their glistening molars for a sidewalk showcase? Measures that require less time and less exertion may be equally effective to preserve the teeth. It was over two thousand years ago in ancient Rome that the testy Catullus admonished Ignatius—a Celtiberian resident—'Wherefore the cleaner are thy teeth, the more surely stale dost thou accuse thyself of having drunk.'[3] The rebuff of Catullus was richly deserved, for the vain Celtiberian—in order to keep his teeth so dazzlingly white—resorted to the extreme of frequently washing them in freshly self-voided urine.

I mention this merely to prove how long ago extremists began the practice of prophylaxis prohibitive.

"Keeping all salivary and sanguinary deposists completely off the teeth as a preliminary to the so-called Smith method of Prophylaxis however is imperative, both as a preventive of diseased conditions of the gum, and to facilitate that complete polishing of all tooth enamel surfaces.

"I have never learned to use the set of Carr instruments. I have a complete set—or rather two of them, that were devised by Dr. Younger of California. One of these I keep at the manufacturers to be sharpened while a thing as *prophylaxis prohibitive.* I read about it in the dental journals and I see it practiced at some clinics I like to have patients come to me at frequent intervals so that I can watch their teeth and see whether they are decaying or not. Here is the beauty of prophylaxis: By seeing patients at frequent intervals you can detect little cavities and fill them before they get to be large and bad ones. When a patient comes to me at frequent intervals,. if I can not take three patients in an hour and do a good job every time I will take my hat off to the next man. I use a soft maple stick made by the Maxwell Morgan people; I take a sharp knife and scoop out one side so that it fits and goes into the interproximal spaces. When you have these spaces clean you have the teeth clean. The rest of the teeth will take care of themselves but you must be careful not to injure the gums. I use the very finest "flour of pumice" and I

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[3] History of Dentistry. Guerini, page 97.

I am using the other; but for ordinary prophylaxis operations, I employ a mongrel set of instruments. With these I am able to keep off all ordinary salivary deposits, and most all that result from sanguinary conditions.

"When all tartar has been removed, I begin the Smith treatment at the median line upper jaw, and go about all exposed enamel surfaces on each and every tooth, using the 'Flour of Pumice' on a stick which has simply been dipped in water. This dipping enables the stick to take up sufficient pumice, and I like the combination better than to mix the pumice with glycerine or other medicaments thus making a muddy menstrum.

"I have brought a set of instruments such as I use however, and I will now demonstrate my method for shaping the wooden points—which points you will observe, are made of soft maple instead of orange wood. These I am able with a small sharp knife to shape for my purpose, and for polishing difficult places—especially the interproximal spaces, I find them more to my liking.

"These are sold by the depots in small wooden boxes, and are marketed under the title of Morgan-Maxfield Porte Polishers. The company make the holders to go with the points.

"Having polished all surfaces of tooth enamel with these, I use between the teeth in all interproximal spaces, stripes of tape which has been gummed by the manufacturers so that it takes out all surplus pumice, and serves also as a detective for any sequester that may be attached or unattached, from the proximal surfaces of any of the teeth.

"The next and final step in the Smith operation, is to wrap a strip of Japanese Bibulous Paper making a little pad of it on one of the wooden sticks; this pad is dipped in a solution, which I usually employ full strength, of a medicament that is sold as Phenol Sodique (Phenate of Soda.) With this pad so moistened I gently massage all the gum, and wipe all the teeth, bathing them quite generously with the medicine. I permit my patients to spit out the surplus, but do not allow them to use any water after this medication; they are obliged to wait until they get home before diluting this final local medication.

"I feel deeply the inadequacy of this meager description of the so-called Smith method of prophylaxis, but without demonstration I am unable to make a more lucid description of the steps of this, as I believe, all important operation."

do not go bang up under the gum margin. If I find deposits there then I resort to the use of a steel instrument and remove them, and then I do not need to do much more.

The worst cases I have had to combat have been those in which there were loose teeth, but in which I did not find tartar. You may call it pyorrhea or anything you like. You will find an agglutinated substance on the teeth and these teeth will wabble about in spite of anything you may do to hold them firm.

I would like to ask Dr. Black if in the cases in which he finds this cheesy deposit without calculus the reaction is acid or alkaline?

DR. BLACK:

I have never tried to find out.

DR. LOW:

I want you to try and find that out and let me know.

DR. RUSSELL W. BUNTING, Ann Arbor, Mich.:

Two years ago many of us attended a banquet given by this society, at which Dr. Black was the guest of honor. On that occasion many of us thought that the time had come when Dr. Black would lay aside his more arduous duties and would enter into a life of ease and retirement, which he had so ably earned. But from what we have seen and heard here tonight we know that no such plan had been entertained by this noble and tireless worker. He has rather gone forward with a new work which bids fair to rank, if not surpass, any which he has heretofore done.

There has been nothing in my experience as a dental practitioner and teacher that has given me more chagrin than has my lack of knowledge concerning the formation of salivary calculus. How often are we asked the question, "Why do salivary calculi form more abundantly in some mouths than in others?" and "What treatment will prevent the formation of calculi?" But two theories have found general acceptance regarding the deposition of the calcareous material, the one that by the escape of the CO_2, the salts are thrown out of solution in the secreted saliva, and become attached to the teeth by the mucous deposits; the other, that in salivas containing high percentages of acid the mucin is precipitated, and in this precipitation the calcium salts are dragged down by the mucin from the saliva. Other than this our knowledge of the subject has been very meagre, and little work of worth has been done in the investigation of the problem.

We are all therefore very glad to know that Dr. Black has attacked the question with his usual thoroughness, and that from his observations has formulated a hypothesis which is worthy of consideration. His hypothesis stated in few terms is that the deposit of calculus does not depend upon the amount of calcific material in the blood or salivary secretions, but rather upon the presence of a colloid substance deposited by the saliva and in the absence of which the calcareous deposit cannot form. Further, that the deposition of the colloid substance, and hence the formation of calculi, can be stopped temporarily by the internal use of epsom salts and permanently by diet and proper living.

The work which Dr. Black has done, and the results which he has obtained, are exceedingly interesting and furnish us with much food for thought. In the discussion of such a paper as this, involving so much original work, it is impossible to do more than attempt to correlate the work done with some other science or group of facts. With this in view we may consider the other calcareous concretions found in the body in the hope that the knowledge of these may throw some light upon the question. Of all the forms which may occur in the body, those calculi which are found in the urinary bladder most nearly approach the salviary calculi in their method of formation, and it may be well to consider the opinions of medical scientists regarding these formations in the light of a possible correlation with salivary concretions.

Stones in the urinary bladder have been known and described from the time of Hippocrates and before, to the present time, and the literature has abundant references to theories held regarding their structure and the method of formation. Very early, two forms of stone were differentiated, namely, the phosphatic and uric acid concretions. One of the more valuable contributions to the subject has been that of Rainey and Ord, in 1879, who demonstrated that something more than a presence of phosphates, or urates in the urine, were necessary for the formation of the stones. Ord says: "To make calculi without colloids would be as hopeless a task as making ropes of sea-sand. The pebbles of the concrete would not hold together without the cement to bind them and act on their surface."

Regarding the causes of stone formation, Dr. E. L. Keyes of the New York Medical College, says: "First among the causes of stone formation, according to the best modern investigations, must be placed the influence of the colloids. Doubtless such substances as disturb digestion and nerve force and furnish an excess of uric acid, of oxylate of lime, of phosphates, as the case may be, favor the formation of stone; but alone they are not sufficient. . . . But the fact remains that urates and uric acid may be in excess in the urine for years, and the phosphates for a lifetime, and no concretions into stone take place, while at any given moment, presumably, during the proper co-operation on the part of the colloids, primary (acid) stone starts into existence; or the presence of a foreign body with inflammation of mucous membrane will speedily give rise to a secondary (alkaline) stone in any individual, whether his diathesis be phosphatic or not. The colloid in the latter case is the alkaline muco-pus, furnished by the inflamed mucous membrane." How closely this coincides with Dr. Black's views of the formation of salivary calculi!

Notnagel says in substance: "The changes in the urine referring to the precipitation of uric and oxalate crystals has been attributed to a diathesis toward these salts. It was supposed to be associated with an overloading of the blood and body juices with these substances due to a retarded metabolism, and especially a diminution of oxidation. But experimentally, when oxygen is cut down, the blood is not overloaded with these substances, nor are they excreted in larger quantities in the urine. Nor have uric or oxalic acids been found in large quantities in the blood of individuals with calculi of these acids." He concludes that there is a certain etiological relation between gout and calcareous deposits, but that, inasmuch as we find uric and oxalic calculi in children who have no gout, the two diseases are not due to the same change in the body juices. He does not mention it, but it seems very possible that the colloids might here be the controlling factor also.

Notnagel also makes two other statements which are worthy of note in this connection. He says that phosphatic calculi are never formed in the urinary bladder when the urine is acid; that such calculi are only found when the urine is neutral or alkaline. I should like to ask Dr. Black if it has been his experience that the reaction of the saliva had any effect upon the deposition of phosphatic calculi in the moutth. Notnagel also says that the presence of lactic acid in the urine will cause a precipitation of uric acid. Is it possible then that the lactic acid formed in the mouth by fermentation of the food stuffs at the necks of the teeth may cause a precipitation of the urates from the circulation at that point giving rise to subgingival calculi?

Rainey did a great deal of investigation of the processes by which calculi are formed. It is generally admitted that by his experiments which he carried on in synthetic solutions he conclusively proved that the determining cause of urinary calculi is an increase in density of the urine, and the presence of a colloid substance in solution in conjunction with an excess of urinary salts for "a crystalloid is deposited from solution in the presence of a colloid, and crystals introduced into a colloid solution are disintegrated and reformed by simple molecular coalescence." Is it not possible that the phenomenon of the hardening of salivary calculi may be explained in just this same manner?

When we look through the medical literature for material which we may correlate with Dr. Black's method of prevention of concretions, we find little that has been written or suggested that is of any practical value. Even from very early times nostrums have been used in the attempt to dissolve the stone when once formed, and have been heralded as great panaceas, but have subsequently been proven worthless. The most prominent case in literature is that of the cure advocated by Mrs. Joanna Stephens. Her formula was purchased by the British Parliament in 1739 for the sum of £5,000. The formula was as follows: powder of calcinated eggshells and snails; a decoction of herbs with soap, ashes of swine's cresses, and honey; a pill of calcinated snails, wild carrot seeds, burdock seeds, ashen keys, hips and haws, all burnt to blackness; soap and honey. At the present time the attempts to dissolve the stone have been discontinued.

As we have seen, there is a general agreement on the part of medical observers that the colloids have an important part in the process of stone formation. It then would seem that if calcareous deposition depended so much more upon the presence of a colloid than upon the percentage of lime salts, some effort would have been made to limit the colloid formation. In this regard there is a dearth of information in the literature and no work of a conclusive nature has been done. Attempts have been made to limit the amount of lime salts ingested, with little avail, pointing again to the colloid as being the controlling factor. For instance, in a case reported by Dr. G. G.

Darling of Ann Arbor, he had removed several stones from the bladder of a man at successive intervals. During one of these intervals the patient drank no water but distilled water, and limited his foods to those which contained the least calcareous material. The succeeding stone formed, however, with a rapidity equal to its predecessor.

Dr. Keyes of New York, in his work published in 1910, outlines the course of treatment which he uses as a preventive measure. (1) Dietetics; (2) Exercise; (3) Encouragement of elimination by other avenues; (4) Diluting the urine constantly; (5) Use of solvents and attempts to dilute the colloids. In his discussion of that part of (5) which pertains to colloids, he says: "To dilute the colloids which seem to preside over crystallization, all that at present can be done is to keep the urine dilute and bland and the digestion perfect, to prevent catarrhal conditions of the stomach and intestines and to avert feverishness from whatever cause." He sums up by saying: "1—Eat lightly; take meat but once a day; eschew sweet foods, dried foods, and above all such foods as interfere with digestion. 2—Drink no wines but white wines, no liquors but gin and whiskey, and these in moderation; drink plenty of water. 3—Exercise freely and in open air. 4—Keep bowels regular. 5—Alkalies or solvents I prescribe with but little hope that the patient will continue to use them."

In the light of our present knowledge the claim of Dr. Black that the calcareous deposition is determined by the presence of a colloid, and that this colloid is the result of improper metabolism, is perfectly justifiable. The observations which Dr. Black is making apply, therefore, not only to salivary calculi but to urinary and biliary calculi as well, and it is possible that the results which he will obtain regarding the control of calculus formation in the mouth may also apply to calculus formation in the urinary and biliary bladder. He has opened up a great field for investigation and research which may prove to be of inestimable value to mankind. It is to be hoped that the doctor will continue his investigation of this subject and that others may lend him the aid which they may, in the collection of data and material, until he shall have found the true solution to the problem.

Dr. Edward C. Kirk, Philadelphia:

I had not expected to be called upon to participate in this discussion. I came here to listen and not to speak; to be instructed rather than to attempt to instruct you. But I respond to your invitation to speak on the question because it gives me the opportunity to pay my tribute of praise and admiration for this wonderful and interesting exhibit which Dr. Black has presented to us. There are one or two points that he has raised which I should like to discuss with him in your presence.

In the first place, if I understand him correctly, in the beginning of his essay he dismissed with a graceful wave of his hand the idea that tartar—salivary calculus—resulted in any way from an interchange or an interplay of chemical affinities within the mouth. I wish he had explained that a little more fully, for while he has dealt very largely with the physical appearance of this deposit, it seems to me that everything he has said indicates that the physical appearances which he has shown to us are essentially the result of the interchange of chemical affinities between the substances involved. I do not quite understand what he meant by that part of his paper and I hope, when he comes to speak in closing the discussion, he will elaborate that point a little more fully for our understanding.

I am impressed, first of all, most profoundly by the wonderful technic which has been exhibited to us here as furnishing data for the puzzling out of this problem, as far it has been puzzled out. I think anyone who has made any attempt to study the structure of tartar must have realized the tremendous difficulty in producing sections of sufficient thinness to be at all understandable under the microscope. Dr. Black, if he had done nothing else for this subject, has placed us under one other obligation to him of no mean magnitude by having shown how we can get at the material so as to bring it into view under the microscope. Now that we have seen it I want to say something about it. The essayist has referred to the meagerness of the literature on this subject but I do not find myself in harmony with that view.

Reference was made by the previous speaker to the pioneer work done by that group of Englishmen, Mr. Rainey and Dr. Ord, and incidentally by Harting of Utrecht, who took up the matter much earlier than 1879; I think it was as early as 1858, in a paper which Mr. Rainey presented before the Royal Microscopical Society in England, entitled "Molecular Coalescence," in which the first record was made of the change in physical appearance of certain calcium salts, when these calcium salts were precipitated in solutions containing a colloid substance. Instead of being crystalline in character the precipitate was profoundly modified and was thrown down in little spherical masses. Rainey found there was intimate union between the calcium salt used in the experiment and the colloid material, so that when the precipitate was acted upon by dilute acids he found the precipitate after the acid had removed a portion of the lime salt was highly resistant to the further solvent action of the acid employed. Because of the spherical appearance of these little masses which grew by concentric accretions to their exterior, as an onion grows by additions to its outside he called them calcospherites and the material of which these minute spherical masses containing the calcium salts were composed he called "calco-globulin," and suggested that this compound was the basis of practically all the processes of calcification that were normal to the human body. I think that the prognostication made at that time, further confirmed by the researches of Harting of Utrecht, and still further extended by the researches of Dr. Ord, have formed the basis of what we know today about the normal processes of calcification in the human body. The work of Mummery of London, of Andrews of Cambridge, of Leon Williams of London, and the work of the essayist of this evening, with reference to the study of that tissue, which is on the border line of calcification, especially as related to enamel formation, have shown that the fundamental principles suggested by Rainey and by Dr. Ord and Mr. Harting, were probably correct, because both in the body and out of the body the colloid substances, whatever their chemical nature, whether in the form of mucilage, of globulin, of albumin, of protoplasm, or gelatin, have the property of modifying the character of the precipitate of the calcium salts, and of producing these spherical masses that gradually enlarge, so that various centers of them form and coalesce into these mulberry-like masses that Dr. Black has shown on the screen. It has been my feeling that this fundamental chemical process was at the bottom of this question of tartar formation. I feel that to be true, because it would seem to me extremely peculiar if the concretions in the mouth, involving as they do the same class of chemical substances, were the only known exception to that principle. The exhibit which the essayist has made this evening seems to confirm that view of the case, for they are combinations of calcium salts with colloid materials. Dr. Black has named the colloids in this case, "globulins." That, of course, is a chemical question. The mere appearance of the mulberry-like masses cannot settle the question of the nature of the colloid involved in their formation. If they are globulins, the chemical composition will determine that point, for it is a chemical not a physical question. There is a tendency on the part of the calcium salts to unite with the colloid materials in a more or less definite quantative ratio, for the reason that if you attempt to act upon the substances—and I am speaking now of the behavior of normal calcified tissue to decalcifying agents—there is a point reached where acid of a given concentration ceases to affect the tissue any further, i. e., it will not extract any more of the calcium salts. I think Dr. Black will agree with that. At that point there is something like a fairly stable union, quantitatively, between the colloid and the calcium salts. But the completely calcified tissue contains lime salts much in excess of the per cent that marks the point where stable union is established and the globulin may take up more and more of the calcified material until calcification of the tissue is complete.

The thing that interested me most was the exhibit of the slide (I cannot call it by number) which was stained by nigrosine. It is a beautiful example of the same thing that Rainey observed and described under the name of "molecular coalescence." My own interpretation of the meaning of that particular clearness of definition, which Dr. Black attributes correctly to a selective stain, is because of the power of that mass of material in varying stages of calcification to take up varying amounts of the stain; that is to say, the mass having various percentages of calcium salts in its make-up absorbs relatively more or less of the staining material and this also is not a physical question, but essentially a chemical one.

I want to speak of the rhythmical or, as Dr. Black expressed it, the paroxysmal nature of the deposit. To me the most encouraging thing he has said about the whole business is the way in which he relates the problem of tartar formation with the question of bodily nutrition. That, I believe, is the crux of the whole business. It is true, and we have seen it is true, for concurrent testimony tends to confirm the idea, that the deposit of tartar is greater on some occasions than upon others. If the finding of Dr. Black is correct, that tartar formation is directly related to the quantity of food taken or more particularly to the kind of food taken, plus its metabolism in a certain type of individual, then we are pretty nearly to the point where we can say that tartar formation is no longer a question of local conditions but rather a local expression of a constitutional condition. That is a point which is of prime importance for us to recognize, and to carry this thought out to its logical conclusion the prophylaxis of the future will not be symbolized by pumice stone on the end of a stick, but it will be accomplished by normal dietetics and normal living.

With regard to the rhythmical character of the deposition, some years ago I wrote one of those X Y Z scientific papers that nobody read, but it is on record. (Laughter.) I called attention to a method of studying the hard structures of the teeth by an optical means which I thought had some value in it, and I still think it has some value in it. By that study I evolved this generalization; given the section of a tooth, representing a section through the enamel, through the dentin, through the cementum, the transparency of the structures of that section under the microscope to polarized light was in direct ratio to the percentage of calcium salts contained in each one of those tissues. Dr. Black does not believe that, but he will come around to it. When you examine a ground section of dentin under the micro-polariscope you will get, not only a histological exhibit of the specimen before you, but if this principle of which I speak is correct, that the tissue is more transparent to polarized light the more highly it is calcified, you then get a chemical analysis by optical means, and you see a most wonderful thing, viz.: that the dentin, instead of being uniformly calcified, is made up of irregular distributions of lime salts that look like rows of snow-capped mountains, cone-like processes coming up through the dentin structure. The apices of the cones being transparent and shading off optically into the valleys at their bases, are as much like a chain of snow-capped mountains as that section of tartar, dentin and enamel shown to us by Dr. Black is like a beautiful mountain landscape with a lake in front of it.

If my interpretation of that polariscopic picture of the snow-capped mountains in the dentin means that in the apices of the mountains there were more calcium salts than in the valleys, then we have a record of that rhythmical process, that paroxysmal character, in the laying down of the lime salts in the calcified tooth structure. It seems reasonable to suppose that is true. We take into our bodies at intervals a certain amount of food which goes through the chemical laboratory of the nutritional processes, and in its fully prepared form is ultimately delivered at intervals to the tissues undergoing calcification. It is not a continuous process, but a rhythmical process, and we would naturally expect the protoplasm of the odontoblastic and ameloblastic cells to be engaged in the processes of calcification, not at an absolutely uniform rate of work, but in a rhythmical way as the food supply was delivered to and utilized by them. I think we have much the same condition to deal with in the human mouth with respect to tartar formation. I want to call attention to another point which I think is important to consider in this connection. While it is true that tartar formation takes place in the mouths of excessive feeders, it is also quite true that there are many individuals who overeat who are examples of what we would call plus-nutrition, gourmands, who have very much the same condition of salivary fluids or bodily juices, but who have no deposits of tartar on their teeth at all. I have met these cases, and I think the rest of you have. They eat more than is necessary to maintain the nutritive processes in a state of normal balance. There are people who have tartar formation and those who do not under these circumstances. I am therefore of the opinion that the interplay of chemical agencies in the mouth, due to differences of salivary composition dependent upon the nutritional process independent of the mere quantity of food, is at the bottom of the question of tartar formation.

I am delighted beyond expression that Dr. Black has brought this interesting exhibit before us, and I appreciate the modest way in which he says he has only started upon the question. I think that is true, but I am glad to be able to applaud his efforts when he has made such a brilliant start upon this subject.

Dr. S. H. Guilford, Philadelphia:

When your worthy President took me aside this morning and told me he expected to call upon me as one of the discussers of Dr. Black's paper, I protested that it would be unfair because I had not read the paper and did not know exactly what Dr. Black was going to say; besides, the title indicated a subject not exactly in the line of my studies. He replied that it did not matter so much what I said, he thought the members wanted to hear my voice; so here I am.

I think the Chicago Dental Society is to be congratulated upon its success in securing two such papers as we have heard read last night and tonight. We all know that this society is accustomed to doing big things but on this occasion it seems to have outdone itself, and those who have come from a distance will realize that they have gained much and have been amply repaid for their journey. We never listen to a paper from Dr. Black without feeling a sort of inspiration. He is a man that has done so many things for the benefit of the profession that we can hardly summarize them, and he is also one who never touches a subject without broadening and illuminating it.

Two thousand years ago people looked to the East for wisdom. Today many of us are looking to the West for information, not only the middle West, but the far West—the Pacific Coast—as we realized last evening.

In discussing a paper of this kind we recognize that a scientific essay should be and really is, to a greater or less extent, of advantage to the entire dental profession. I know there are multitudes of dentists who will not subscribe for some dental journals because they consider them too scientific. They do not contain articles calculated to aid them in a material way. This is one feature that has kept us back from realizing our better possibilities. The dentist has long been known to his fellow men as one who deals with material things; as a man who extracts teeth or fills, or replaces them, but he has never appeared to the public as a scientific man. Now, if we want to make our impress upon the world at large, we must do something more than can be accomplished by manipulative efforts. We are at the present time, perhaps, emerging from a condition which has prevailed, and there is opening up to us an opportunity such as we have never known before.

Many years ago I listened to an eminent medical man in the City of New York, who said on that occasion: "The objection we have to the dental profession is that its members have never done anything for mankind in a general way. In other words, they have never striven to benefit those who could not pay them for their services." He said: "We have hospitals, we have clinics, we serve the poor, but what has dentistry done?" Of course such statements hurt our feelings and probably all the more so because they were true. He was not entirely disingenuous in his remarks, however, because we know that while the physician gets credit for doing a great deal of charitable work, it is done in many cases not simply for the sake of charity, but for the purpose of benefiting the individual physician himself. The physician, no matter what department of medicine he is engaged in, absolutely requires a hospital and a clinic in order to give him the variety of cases and variety of experience which he needs to constitute him a successful practitioner. At the same time, however, we certainly have not done our part. But today, with the new field of Oral Hygiene opening up, we have an opportunity to do something for the world, and we are grasping it. The public service idea has spread almost like wildfire, not only over this country but other countries, and our opportunity is before us. If we endeavor to do our best in that respect; if we are willing not only to serve the public without remuneration but to teach them how to serve themselves, how to benefit themselves, how to preserve the health of the teeth and the oral cavity, we will be doing a service for humanity; one that will reflect credit on us perhaps greater than that which is reflected upon the medical profession, because we have nothing to gain by it individually. What we do in that direction is done entirely in an altruistic spirit, absolutely for charity and nothing else.

In the matter of scientific investigation there are men qualified to do scientific work, and yet the great majority are not qualified by education or by disposition to do it. I confess I belong to the great majority; yet at the same time every one has his sphere. Possibly you may remember the verses written by Rudyard Kipling and dedicated to the late Admiral Evans, in which he said:

"Zugbaum draws with a pencil,
And I do things with a pen;
But you sit up in a conning tower
Bossing eight hundred men."

Each one of us has the ability to serve in some way, and while Dr. Black does not spend his time in a conning tower bossing eight hundred men, he is working in his laboratory and inspiring the entire dental profession, and I am sure if there is any desire near to the heart of Dr. Black it is that the younger men of the profession shall turn their attention to scientific investigation, take up the work as he shall leave it, and carry it forward.

I know that is his wish and if benefit can come from such work, there is no reason why dentistry should not take a great stride forward. If that is done, and if some of the younger men will turn their attention to real scientific investigation, I believe the thing that will most inspire and encourage them is the fact that they have had the example and the influence of a man who, through his tireless energy and absolute unselfishness, has worked for the good of the profession; a man who has done more for the good of humanity through the advancement of dental science than any man who has ever lived—Dr. Black.

Dr. John M. Gilmore, Chicago:

I believe that a great deal of time is wasted upon scientific research and scientific investigation, and not enough attention paid to the things as we see them in our everyday practice.

In the admirable paper presented by Dr. Black this evening, illustrated by numerous slides, your attention was called to the paroxysms of deposits of salivary calculus, and that these paroxysms of deposits occur after every good meal. If the paroxysms of deposits occur after every good meal, why is it, may I ask, that so many people who indulge freely in the good things of life are entirely free from deposits and even those having deposits are not so overburdened with them as we might expect from the essayist's conclusions?

Tartar collects and agglutinates on the teeth only where it is invited and the surface well prepared for its reception, and to fill a depression left by the recession of the gums. A patient visits your office with a goodly amount of tartar upon the teeth. You remove the deposits and a gap is left between the gingival margin of the gums and the hard tissues that were once filled with gum tissue, and when you saw it, with tartar. At the end of a few days the space left between the teeth and gums is filled up. With what? With food. And unless this food is mechanically removed, it permanently remains, gradually undergoing chemical change, animal and vegetable matter giving place to the mineral deposited through infiltration, getting firmer and firmer until it is called by the misnomer, "salivary calculus," for I believe the greater part of the mineral deposits come from the food and drink directly rather than through the saliva. Note here, also, as soon as the vacancy is filled the tartar paroxysms cease. When a plate is worn in the mouth that does not coaptate with the surrounding tissues, nature fills the vacancies and again deposits cease.

I believe Dr. Black is right in saying that deposits occur more profusely after partaking of a superabundance of food; but what of it? The harm to the individual does not come from the formations, but from the neglect or inability to restore normal conditions.

When an individual presents himself to you with a perfect set of teeth and gums perfectly intact, clinging so closely that the thin edge of the gum tissue seems, if possible, to grow out of the very enamel and the gum septum fills the interproximal space perfectly and rigidly to the point of contact there is no chance here for deposits. Before deposits begin to form on such an individual's teeth, a slight loosening of the gum tissue around the cervical margin and a softening of the gum septum must occur, thus inviting foreign matter to adhere to the rough surface and fill the gap prepared for it; when this is filled further deposits cease and is only added to by further relaxation and recession of the gum tissue. The amount of tartar is governed by the amount of relaxation and dissolution.

Deposits upon the teeth are looked upon as the cause of diseases of the gingivae. I believe this is erroneous and deposits in themselves are not only harmless but act as a friend rather than a menace to the sickly margins, guarding, and preventing their more rapid destruction by the impact of food in the course of mastication. If the deposits are timely removed and the gums massaged and restored to their former tonicity we need not look for their recurrence; but, if neglected, bacteria will congregate underneath and aid in the destruction of more tissue, hence inviting additional accumulations, or the formation of pockets down the side of the root, or both.

In treating cases with large deposits and consequent much recession and inflammation, I believe it much better practice not to be in too big a hurry removing these deposits. Much better work in curing the pockets and in the restoration of tissue can be accomplished by removing the soft accumulations and restoring the tone of the soft tissues by the hot water massage, and even treat and cure the pockets before removing the occlusal part of the hard deposits, because if these deposits are removed in toto, as is customary at the first sitting, there is nothing left to protect the soft, inflamed, and bleeding margins against the stress of mastication and as a consequence have much greater loss of tissue, also more room for larger secondary deposits and greater difficulty in preventing their formation and in the restoration of lost tissue.

In reference to the remarks made by Dr. Kirk, I believe prophylaxis will be taught later on as one of the essentials in our mode of living. The mode of living has a great deal more to do with dental caries and pyorrhea than any of us are aware. If we live properly and are careful about our habits, there is no reason why we should either have caries or pyorrhea. And the best treatment we can afford our patients is to educate them to guard against these diseases by proper living.

Dr. William Conrad, St. Louis, Missouri:

It gives me great pleasure to say that I came to this meeting this evening for the sole purpose of hearing Dr. Black's paper. I listened attentively to every word of it. He is a man of such great talent that he leaves an inspiration for closer observation, if not for more study.

Speaking of oral and dental prophylaxis, I was very sorry to hear that distinguished dentist from Buffalo (Dr. Low) make the remark he did. In the newly erupted first molars he said he could take care of the decay. It should never be that. Decay is an absolutely unnecessary part of the human mouth. I have extended an invitation to many of you gentlemen from time to time to come to St. Louis and spend a week or a month with me, at my expense, and I believe you will go away convinced. This wave of oral and dental prophylaxis that is sweeping over the country is going to make many, many skilled experts; not only that, it is going to make a very great advance in the practice of dentistry, and I believe that any man with an ordinary intellect can outline what will follow certain conditions for ten years to come; and the day will not only come when the dentists will be better, but when the state and city authorities will be compelled to keep the mouths of the indigent poor in perfect order. You cannot have a compulsory educational law up to fourteen years of age, with a complete system of police to enforce it, unless you keep these people in a condition so that they can obey the law.

Dr. George W. Cook:

I have done some studying along the lines indicated by Dr. Black this evening, but have come to somewhat different conclusions as to my interpretation of the conditions he has described. I would like to have had the opportunity to point out from his slides some of the conditions I have observed that have seemed to me to be somewhat different from those he has mentioned, but as the hour is so late I will not attempt to do so. These studies are of great interest to us as a profession, and I hope great good will be the outcome of them.

Dr. Thomas B. Hartzell, Minneapolis, Minnesota:

When such eminent men as Dr. Black and Dr. Kirk discourage you in keeping your mouths clean by prophylactic methods, I think they have left an impression on your minds that they really did not intend to leave. We all know that the bacterial flora in the mouth is very rich, and that the men who are using orange wood sticks and various methods of keeping the tooth surfaces free from accumulated bacteria that gather there should not be discouraged in their efforts in the direction of mechanically eliminating a large amount of bacterial growths. They should keep on. They are not doing harm. Most of them are teaching a lesson in mouth sanitation, showing patients where the deposits are, and in removing the deposits, they are at the same time getting rid of many harmful bacteria. We will all hail the day when we can give up our present laborious methods for those advocated by the essayist. In the meantime let us not neglect prophylaxis.

THE DENTAL REVIEW.

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PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

ANOTHER COUNTY HEARD FROM.

The following dispatch was recently sent out by the Associated Press, and judging from the requests which we have received to notice the matter editorially it is likely that it appeared quite generally in the daily press throughout the country:

> SCORES USE OF TOOTHBRUSH—MEMBER OF CONGRESS SAYS MOTHER WHO MAKES CHILD CLEANSE TEETH SHOULD BE PUNISHED.
>
> Washington, D. C., March 1.—"If I had my way I'd make it a penal offense for any mother to put a toothbrush in the mouth of a child," declared Representative Cyrus Sulloway of New Hampshire today at a hearing before the District of Columbia committee on a bill to regulate dentistry. Representative Sulloway denounced the use of the toothbrush vigorously and lauded the good old days of tobacco chewing and dipped snuff."

Usually a statement of this sort would be beneath the notice of sensible people of the present generation, much less the dignity of editorial mention; but here is a man who by the strange grace of his constituents is placed in the position of a lawmaker of the land, and who presumes upon his position to insult the intelligence of the public by attacking one of the most common decencies of our modern civilization. In any representative government where the will of the people dictates, there is always the possibility of occasionally placing a man in power who has some pronounced peculiarities, and it is considered well worth while to take the chances of electing such a man at times in order to carry out the fundamental principle that the will of the people should rule. But here is presented the spectacle of a man in our national government who openly advocates "the good old days of tobacco chewing and dipped snuff," rather than to follow out the laws of common cleanliness of person. It might not be expected that the honorable gentleman should be conversant with the evil effects on the health of neglect of the teeth, though this subject is rapidly becoming better understood by readers of the public prints of the day, but that he should use his official position to decry ordinarily decent habits of cleanliness, and laud other habits which have long since been recognized as notoriously filthy and detrimental is beyond comprehension in a man occupying the place he does.

Possibly the best way to meet such a statement as he has made is through the medium of ridicule. This seems to be the opinion of the *Chicago Tribune,* which has in its issue of March 4th, the following editorial:

WILD TIMES.

"The Hon. Cyrus Sulloway of New Hampshire, is another statesman to note with sadness how we abandon the simple ways and honest pleasures of our fathers and give ourselves to the gay life of radicalism, dropping plug tobacco and dipped snuff and taking up with toothbrushes.

"If I had my way," said the Hon. Sulloway, "I'd make it a penal offense for any mother to put a toothbrush in the mouth of a child." A mad generation quits chewing tobacco and immediately begins thinking of the initiative and referendum. It quits sniffing snuff and gets its head full of "isms." And the toothbrush—Mr. Sulloway is persuaded it is unconstitutional.

These are wild times for sober minded men."

And in the same issue of this paper, Dr. W. A. Evans, in his department, "How to Keep Well," has this to say:

CLEAN TEETH A BENEFIT.

"J. E. K. writes that Congressman Sulloway is reported as having said if he had his way it would be against the law for a mother to brush her children's teeth. He thought our teeth were better before toothbrushes were used, in the good old days of chewing tobacco. There was no decay then.

REPLY.

Woods Hutchinson, in "We and Our Children," has shown plainly that the impression that primitive people have sound teeth is a myth. Teeth are cleaner today than ever before. Every now and then some pessimistic party breaks out with an antediluvian wail for the good old days. Cyrus had eaten a New England boiled dinner, had failed to chew it well, and was having a misery which he thought was a thought. In the good old days there was more consumption, more diphtheria, more dead babies, more young widows, more useless waste of lives and health than would be tolerated today. Chewing tobacco and dipping snuff will not kill germs, but does add something to the uncleanliness of the mouth. In the old regime food was coarser and chewing was harder, and that was good for the teeth. Every other factor of civilization was worse for them."

When the daily press of the country takes up the cudgels for common decency against such statements as have been made by the honorable gentleman at Washington there is some hope that his antediluvian theories of hygiene will have little effect except to make his own distinguished personality look ridiculous. The toothbrush has come to stay till we can get something better to take its place, and that something is not tobacco or snuff.

AN IMPORTANT WORK.

For twenty years Dr. Carl H. von Klein, now at the John Crerar Library, Chicago, Ill., has devoted most of his time to the translation into English of the famous Papyrus Ebers, and the work is finally completed and ready for the printer. Its publication depends on securing an advance subscription list of one thousand at five dollars each to pay the actual cost of printing and binding. Already more than six hundred names have been sent in as subscribers. There never has been a work of greater importance to medical history than this, and it is particularly interesting to dentists from the fact that it contains a chapter devoted to dental science, or the treatment of dental diseases of 7,000 years ago. Such a work as this is of inestimable value to the world, throwing light as it does on the medical and dental science of so many centuries ago. This work should not longer be delayed in its publication. Dr. von Klein is getting to be an old man and after all these years of faithful work he should be permitted to see the result of his labor given to the world. This is his fondest dream. The book will consist of 650 pages, 7x10 inches, in two colors (red and black), similar to the original, with six plates, bound in one volume. Subscriptions may be sent to Dr. Carl H. von Klein, Medical Department, John Crerar Library, Chicago, Illinois. The work is to be sold only on subscription and the publication is to be supervised by Dr. von Klein personally.

THE EDITOR'S DESK.

LETTER FROM MR. BINGHAM.

The publication in our February number of a letter from my friend, Mr. C. L. Bingham, who was then on a trip around the world, created so much interest among our readers that I wrote him immediately on his arrival in California and asked him for another letter. Like Oliver Twist, I "wanted more," and the result is the letter which follows. If Mr. Bingham had taken up newspaper correspondence instead of managing a dental depot his fame would have extended—well, it could not have extended much farther than it has any how, so what difference does it make? This letter pleases me immensely, as I am sure it will my readers, but there is one brief indictment that I cannot let pass. Every blessed fellow who goes out to that state of California sends me back some message of commiseration for having to live in Chicago. The very idea! One of these bright and beautiful days, of which we have so many here, I am going to write an article on the advantages of Chicago that will make California look like Sahara in comparison. Snow-drifts! Yes, we have had a few, and did you ever stop to think what snow does for a community? It is the greatest purifier known. It purifies the air through which it comes and the earth upon which it lights. It nourishes the soil, and keeps down the dust. It—but hold on, speaking about dust—isn't it a solemn fact that you had just a trifle too much of it in California this winter? But I forbear—I am in no mood to "retaliate in kind." Mr. Bingham's letter will make us all want to take a trip around the world. Here it is:

The Raymond, Pasadena, Cal.,
March 6, 1912.

FRIEND JOHNSON:

Your appreciated messages received along with many similar heart-warmers following safe anchoring of our splendid ship inside the Golden Gate, and after a royal welcome in San Francisco, we side-tripped to this sunshiny Southern California temporary home of a numerous Chicago colony. I should not refer to Pasadena's blossoms, birds and balmy breezes while you are buying an extra ton of coal, digging yourself out of snow-drifts, or fighting lake winds near Lincoln Park, but wish C. N. J. was here, for he works too hard and rests too little. You asked me to write after seeing the Himalayas, China and Japan. It is over three months since I have written at length to anyone outside my family, and the days have been filled with memorable broadening experiences likely to keep mental digestion good indefinitely. Confines of a letter allow scant mention of Ports made, but entire round was satisfying and delightful, touching points off usual routes of travel, as well as the "beaten paths" and usually interiors were far more interesting than coast cities. We willingly left hot, dirty Calcutta and found Burma lovely, and the Irrawaddy's banks fascinating with mat covered huts, tropical trees, flowers in a riot of color, pagodas, gold, silver, blue and white, more pagodas and then some. Rangoon, now one of the world's rice markets, and third port of Indian Empire, with fine parks and streets, was a few decades back a musty village noted only for the marvelous Shwe Dagon golden pagoda, the richest symbol of Buddhism. A long climb up steps lined with stalls, many women smoking huge cheroots and jolly languid-eyed Burmese peddlers brought us out on a platform among hundreds of pagodas and shrines covering Buddhas galore, graven images of wood and stone and precious metals. In center of hill rises the dazzling Shwe Dagon, a gigantic bell-shaped structure covered with thin plates of pure gold worth $7,000,000, the spire 400 feet high surmounted by a "ti" set with rubies and precious stones and hung with 1,600 gold and silver bells tinkling sweetly in every breeze. This jewelled ornament cost the Burmese king who gave it, $250,000. Before the shrines thousands offer flowers and rice cakes, burn candles, and pray while strange musicians, money changers, incense bearers, soldiers, yellow robed priests and a living white elephant fill in a marvelously striking scene. The great elephants working in the lumber yards excel any circus performance. They never strike, although at sound of the noon whistle instantly drop their heavy teak logs and march off to dinner. We score them higher than the human jugglers and snake charmers. Singapore has picturesque harbor, with great display of shipping from the four corners of the earth, and on shore a motley population of Chinese, Malays, Cingalese. Parsees, Turks, Arabs, Burmese, Japs, Hindoos, Jews, Klings, Javanese, et al., with tall Sikhs for police and English in command. From the famous Raffles Hotel we took rickshaw rides behind big legged runners to parks and botanical gardens, especially rich in orchids. Crossed Strait, and were saluted by the toy army and navy of the Sultan of Johore while inspecting his tiny kingdom and exclaiming over brilliant wild bougainvillaeas and flaming poinsettias under towering palms. Java found us carrying Neptune's certificate of crossing the equator 530 miles north and wearing more clothing than the natives, humidity kept us in a continuous performance Turkish bath. Tandjong Priok, Weltevreden, Batavia and country interesting, with excellent hotels and proofs of the paying commercial investments the Dutch have made. One day we went to Buitenzorg, visiting governor's palace, wonderful botanical garden (a gigantic out-of-door hot house), noted park with superb lily pond, rare plants, and bamboo bridge across the river Tji.

It seemed like running home when steaming by Borneo to the Philippines and naturally a thrill came with the first breaking out at mast head of the Stars and Stripes since leaving Hoboken, as we sailed through Manila Bay to music of the constabulary band and cheering of allied chambers of commerce men and others in steamers sent out to greet us. Our welcome was socially and atmospherically warm as we docked and were escorted hither and yon on land or up the Pasig River. The Escolta was lively with Christmas displays and shoppers in white duck and straw hats. One afternoon we enjoyed a 60-mile auto spin over fine roads with glimpse of the new boulevard to Cavite, Fort McKinley with 6,000 troops, the largest Army Post under U. S. flag, San Mateo, and up to Montalban, a gorge in the mountains where a branch of the Pasig is checked by water works dam. Villages are picturesque, natives' costumes striking and novel sights include strange river craft and water buffalo. Sunday morning we visited several old cathedrals and before entering one passed in the church yard scores of roosters tethered close enough together to arouse belligerent attitudes and being massaged and guarded by owners who took turns going inside to mass before tucking their birds under their arms and departing to spend balance of day in the big cock pits. Uncle Sam did not need the Philippines, but is doing his duty and making progress. The schools are working wonders and outside the class-room he is teaching the Manila boy base-ball to wean him from gambling and cock fighting while the boy's dad daily gains confidence in the Government's intentions and ability to perform while marveling at improvements already made. We celebrated Christmas approaching the wonderful harbor of Hong Kong and next day enjoyed the magnificent panorama below Victoria Peak. Just a word of praise for the real John Chinaman, who has been maligned by Bret Harte and other "foreign devils," but will some day have to be reckoned with the world around. On a par with our own "tough" the criminal class in the "Flowery Kingdom" is unspeakably bad, but there are few of him in proportion to the 400,000,000 others who are clean, capable and absolutely honest. One of the most fascinating imaginable trips is that to Canton, where before docking our boat picked its way through a floating city of 400,000 souls born on the river and working, marrying and dying in their little sampans. Amazing spectacle without duplicate elsewhere. In sedan chairs, swung from bamboo poles, and handled with consummate skill by a dozen coolies our party of five, with guide, spent one day largely inside the walls unmolested and cordially treated, although sullen Manchus were in ugly mood as Republicans had just triumphed and queues were being cut off. No other city like Canton with its dense population of 2,000,000 in small area and one can never forget the sensational ride through crooked 6-foot narrow alleys darkened by long vertical signs and overhanging roofs, while literally up against thousands of Chinese. Gorgeous shops, clean markets, temples, old water clock, city of dead, fire towers, ivory, jade, feather jewelry and wood workers all intensely interesting. Japan is a merry play ground, and while a large question mark must be raised as to sincerity of the Jap, and some of his failings cannot be hidden, it is pleasant to record right here belief in value of foreign missions, and the feeling that time is coming when we shall hail a Christian instead of "a heathen nation." From the moment when swinging into Nagasaki harbor, a bomb exploding high in air released an American flag to float down before us until reluctantly leaving our rickshaws on Yokohama's pier it was one continuous welcome with entertainments from flower festival and Geisha posturing to kite flying and night lantern parades. We left ship after charming Inland Sea ride and toured overland visiting Kobe, Hiogo, Osaka, Nara, Kyoto, Kamakura, Tokio, and Nikko with several days' detour for excursions from famed Miyanoshita into the mountains and hot spring district, a ride on bewitching Lake Hakone, with most enchanting view of Fujiyama and tramps through Cryptomeria avenues over the hills. Ask me about Temples, Japanese babies, gardens, boys eager to learn and imitative ability of the grown-ups. We have crossed three oceans and seven seas without a storm and broke the Pacific voyage by a couple of days' stop at Honolulu, where we were decorated with floral "Leis" and "Aloha" buttons, enjoyed exciting surf boat riding at Waikiki, ate pineapples in the Moana, attended a Royal Hawaiian song and dance affair and saluted the flag floating over 3,500 of "our boys" on U. S. cruisers. You want, like other friends, to know what vision in nature has impressed me most, and I answer instantly, the Himalayas as seen at sunrise from Tiger Hill, eight miles beyond and 1,200 feet above Darjeeling. Any attempt to portray the indescribable majesty and beauty of the sublime panorama is simply throwing together adjectives and expressions conveying comparatively no idea of the reality. The astonishing narrow gauge railroad ride from Siliguri through Kurseong well repays the traveller who often reaches Darjeeling and returns to the plains without a glimpse of the "Snows," but we were blessed with two days' perfect weather and only enough clouds to heighten the sunset and moonlight effects 7,000 feet above the sea. In twenty-four hours we ran the gamut of four zones and became lightning change artists in clothing while keeping eyes both sides the train for strange sights in the jungles and on the hills until at the famous Ghoom rock the crest of the world burst into view with "Kinchenjunga" dominating foreground of the marvelous spectacle. Pile up four Washingtons and a Rigi, or eighty Masonic Temples above the floor of Thibet, and four of these Himalayan monarchs would smile calmly down on the 28,000 foot monument. The next morning on horseback at three we saw the moon set and rode eight miles by starlight, later watching the sun come up and touch King Everest over 29,000 feet above the sea and quickly after the whole titanic snowy range turned gray, then pink, then glittering white, without a cloud in the sky. Down over the trail in sunlight while mists in the valleys condensed into clouds below the timber line of nearby range leaving the distant mountains untrodden by foot of man seemingly rising to Heaven, which their purity typifies. My thoughts flash back some years to a day in Vermont when my sainted father, while whipping Mount Mansfield brooks for speckled trout, inspired in his small boy a love for nature, especially mountain scenery. Since then I have crossed every state in our own fair land, toured the Yosemite, Grand Canyon and Yellowstone, seen Vesuvius' smoke from Naples, gazed at Mont Blanc from Chamounix, the Jungfrau from Interlaken, the noble Sierras from Granada, uncovered with the Jap before sacred "Fuji," and turning my back on the unconvincing reputed sites of Jerusalem, climbed the Mount of Olives to look at Bethany, Bethlehem and the distant Jordan valley, but never experienced the overpowering sensation enjoyed before God's mountain masterpiece, the Himalayas.

Just read this on the installment plan, as it has been penned with many interruptions and glances over the flower beds, orange groves and distant strip of ocean to mountains on Catalina, and a longing for the coming summer reunion in the White Mountains across the continent. Here's invitation to Intervale, and a stroll across the meadows under the maples and elms, or through the Cathedral pine woods, where I shall likely tell you that there is no place like home. Remembrances all around.

Sincerely,

C. L. BINGHAM.

BOOK REVIEWS.

THE AMERICAN TEXT-BOOK OF OPERATIVE DENTISTRY. Edited by EDWARD C. KIRK, D. D. S., Dean and Professor of Dental Pathology, Therapeutics and Materia Medica, University of Pennsylvania, Department of Dentistry. Octavo, 932 pages, with 1,015 engravings. Cloth, $6.00, net; leather, $7.00, net. Lea & Febiger, Philadelphia and New York, 1911.

To do full justice to so important a work as this within the limits of a magazine review is quite impossible. In the present edition the editor and contributors have treated the work to a very liberal revision to bring it up to the requirements of latter-day methods. This is particularly noticeable in the chapters devoted to operative procedures, such, for instance, as the one on Cavity Preparation, by Dr. T. E. Weeks. In this chapter the author has outlined in a clear and effective manner the most recent methods of preparing cavities, and has illustrated his story with numerous cuts, which tend to a ready understanding of the theories advanced.

The chapter on "Plastics," by Dr. Marcus L. Ward, goes very exhaustively into the much mooted subject of Amalgam and it will repay careful reading and study.

In the chapter on "Pyorrhea Alveolaris," the editor, Dr. Kirk, considers in some detail the subject of calculus formation in the mouth. Just now this subject is of special interest due to the recent investigations of Dr. G. V. Black, whose paper read in January, 1912, will be found in this issue of the Dental Review. Dr. Kirk's theory of the formation of salivary calculus is somewhat at variance with the opinion arrived at by Dr. Black. The former feels that the significant factor in the precipitation of calculus is the chemical reaction which takes place as the saliva enters the mouth and encounters a new environment, while the latter says little about the chemistry of the subject but emphasizes the fact that after overeating, particularly with certain kinds of food-material, the fluids of the body are surcharged and free precipitation occurs. There is some hope now, in view of the fact that our foremost men are studying the question, that we may arrive at a definite solution of the problem.

Everyone seems to agree that the manifestation of deposits has a direct relationship to pyorrhea, and yet in the mind of the reviewer, while there is no question that many cases of impairment of the membranes and supporting structures of the teeth are due directly to the irritating effects of deposits, it has not yet been demonstrated that the deposits under the free margin of the gums are not sometimes the result of this impairment rather than its original cause. It is a most fascinating subject for study and we look forward with confidence to the time when someone will make out the etiology of pyorrhea alvolaris in the same commanding way that Miller did with dental caries.

That Dr. Kirk places some significance upon the constitutional factors involved in pyorrhea is evident by his chapter on "Vaccine

Therapy of Oral Infections," and we wish space would permit us to consider this phase of the subject—for lack of which we must refer the reader to the book itself.

The chapters on "Orthodontia," by Dr. E. H. Angle, and "Dento-Facial Orthopedia," by Dr. C. S. Case are up to the high standard of these renowned authors, and the text-book as a whole is a credit to the literature of dentistry.

PRACTICAL HINTS.

EDITED BY J. E. SCHAEFFER, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, THE DENTAL REVIEW, 55 State Street, Chicago, Ill.)

Bumpy Engine Belts:—An engine belt that does not run smoothly over the pulleys is the cause of much discomfort both to patient and operator. I have found that this is often caused by little pieces of lint from the belt getting in the grooves of the pulleys, especially the handpiece pulley. Celan them out often and you will be surprised at the results.—*Harry D. Lyon, D. D. S., Oakland, Cal.*

Taking Impressions:—In taking impressions use plentifully that much needed quality of mind in dental practice known as American Common Sense. Be scrupulously clean, use the best grade of plaster, a perfectly adapted tray, the proper quantity of plaster, carefully placed and removed at the right time; observe these particulars by any means your ingenuity may suggest, and you will succeed.—*Carl Klein, D. D. S., Chicago.*

Finishing Gold Inlays and Fillings:—In finishing the occlusal surfaces of gold fillings and gold inlays it is often difficult to obtain a good finish in the sulci between the reproduced cusps. The very next time you have trouble in this respect try a Robinson's cup shaped brush wheel with plenty of wet pumice, run the brush wheel until the surface is dry and luster appears. If any scratches remain, do it again, and follow this with wet whiting in the same manner. The finest possible polish is obtained by this simple procedure.—*F. J. Yerke, Minneapolis, Minn.*

Nitrous Oxid and Oxygen Anaesthesia:—The advantages of administering oxygen with nitrous oxid for extracting cannot be overestimated. This combination produces a smooth and tranquil anaesthesia, free from stertor, cyanosis and all other forms of asphyxia. The duration of the anaethesia is entirely under the control of the anaesthetist, so there need be no hurry with the operation, consequently the liability of laceration is lessened. Even for the extraction of one tooth a small percentage of oxygen is advantageous, if only for the additional comfort and safety it affords the patient, and the lessening of the after effects.—*Alfred Hall, D. D. S., Chicago.*

Suggestion for Gold Inlay:—When you do not wish the gold to show or to have it show as little as possible, proceed in the following manner: An upper central cavity extending from gingival to and including the incisal half of the tooth is prepared as for a gold inlay. Before investing the inlay cut away part of the labial surface of the wax, leaving about one millimeter at the incisal and approximal surfaces. Cast and cement to place. Now cut gold away as deep as you think necessary, leaving a line of gold on the approximal surface and about one millimeter in thickness at the incisal edge for strength. Select shade of enamel and proceed to fill as you would in any enamel filling.—*Frank A. Hoyt, D. D. S., Chicago.*

Acute Infection:—There are two determining factors in every infection. First, the virulence of the invading organism, and second, the general resistance of the host. An early interpretation of these two equally important elements, in every case of infection, is of paramount importance both to the patient and practitioner. Indeed, the greatest measure of success, in handling this class of cases, depends largely upon one's ability to correctly measure the strength of each of these two forces in a given case. Intelligent treatment always presupposes a definite conclusion in the surgeon's mind as to the relative strength of the two elements.

The ordinary avenues of infection are first, the root canal; second, alveolar process; third, impacted teeth, especially lower third molars; fourth, blood stream; fifth, compound fractures.—*F. B. Moorehead, M. D., D. D. S., Chicago.*

Commercial Muriatic Acid:—As one buys it from the druggist with the aid of the Apex Treating Broach, which has a "V" shaped notch in the end of it, the notch insures certainty of carrying cotton to the desired spot—works wonders in treating apical inflammation through the root canal. This acid will upon the first application often reduce painlessly to comfort the most aggravated cases of pyorrheal suppuration.

Wrap a few fibers of cotton on a serrated notched broach, dip in Hcl_3, pass to end of pocket, wash out with warm water, then pack a few fibers of cotton saturated with acid in pocket—let remain 24 hours. This is best accomplished with oiled smooth notched broach.

Fistula may be treated in the same manner. Absorb excess acid from cotton before applying. Repeat when necessary.—*L. L. Funk, D. D. S., Chicago.*

Taking the Bite:—Everyone recognizes that taking the bite is one of the most difficult things we undertake in dentistry. I do not see how anyone can expect to get a correct bite by the mush bite process. When the steps are followed by means of the trial plate it is a very simple matter, and it is a sure method of getting the proper relations of the upper to the lower jaw. The avoidance of the protrusion, or the lateral position of the jaw in closing is easily overcome. The suggestion of having the patient place his tongue at the heel of the plate is a new one and it is possibly a very good idea, but I have adopted the method I believe originated by Dr. Prothero, and that is taking the jaw between your forefinger and thumb and doing the biting for them. Just ask the patient to loan you his jaw for a minute. When you get the jaw relaxed you will almost invariably get the correct bite.—*F. E. Roach, D. D. S., Chicago.*

Removing a Growth:—The majority of dentists do not give sufficient attention to artificial dentures which have been in the mouth for years and have become ill-fitting and useless. This loose condition causes a growth which may develop into a sarcoma or carcinoma by the constant irritation.

We removed a growth last September from the superior left side of the mouth of Miss W., which had remained in the mouth ten years and at the points of attachment the alveolar process was absorbed so that there was quite a depression at those places. After the removal there was profuse bleeding so that the tissue had to be clamped with an artery forceps and held for half an hour, when the hemorrhage ceased. Feeling that the growth might be malignant, a section of the tissue was microscopically examined and found to be a sarcoma. So this growth may return at any time.—*A. Brom Allen, D. D. S., Chicago.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of $2.00 an inch.]

NEBRASKA STATE DENTAL SOCIETY.

The Thirty-Sixth Annual Meeting of this Society will be held at Lincoln, May 21, 22, 23, 1912. J. H. Wallace, Secretary, Omaha.

NEW CATALOGUE.

W. B. Saunders Company have just issued a new (16th) edition of their Illustrated Catalogue which describes some forty new books and new editions published by them since the issuance of the former edition.

SOUTHERN MINNESOTA DENTAL SOCIETY.

The Twenty-Seventh Annual Meeting of the Southern Minnesota Dental Society will be held at Mankato, Minnesota, April 8, 9, and 10, 1912. Programs will be issued in due time.—C. A. Hintz, Sec'y, New Ulm, Minn.

ILLINOIS STATE DENTAL SOCIETY.

The Forty-Eighth Annual Meeting of the Illinois State Dental Society will be held at Springfield, May 14, 15, 16, 17, 1912. A. E. Converse, Chairman Local Arrangements Committee. J. F. F. Waltz, Secretary, Decatur.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Michigan State Board of Dental Examiners will be held at the Dental College, Ann Arbor, Mich., commencing Monday, June 17th, at 8 a. m., and continuing through the 22nd. For application blanks and full particulars, address F. E. Sharp, Sec'y, Port Huron, Mich.

TENNESSEE STATE DENTAL ASSOCIATION.

The Forty-Fifth annual meeting of the Tennessee State Dental Association will be held at Memphis, Tennessee, in the Business Men's Club Rooms, June 6, 7 and 8, 1912. The Business Men's Club extend the courtesies of the club to all the visiting dentists, and the Association invite all Ethical dentists to attend.—Chas. A. Tavel, Pres. J. L. Manire, Sec'y.

THE PEOPLE'S DENTAL JOURNAL.

This is the name of a magazine published in 1864-5 by the late Dr. W. W. Allport. Dr. L. P. Haskell had the eight numbers bound in a volume and it is probably the only bound volume of the journal in existence. Some time since he loaned the volume and has forgotten to whom. This is a request to have the book returned to him, in case the borrower chances to read this notice.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The Wisconsin State Board of Dental Examiners will convene in Milwaukee, at Marquette University, on Monday, June 24th, 1912, at 9 a. m., for Examination of applicants to practice in Wisconsin. High School diploma, applications and $25.00 fee must be filed with the Secretary 15 days prior to above date. Dental diploma to be presented in advance of examination. F. A. Tate, Pres. W. F. Hardy, Sec'y, 422 Jefferson St., Milwaukee, Wis.

NEW JERSEY STATE DENTAL SOCIETY.

The Forty-Second Annual Convention will be held in the "Hotel Cape May," Cape May, N. J., July 17, 18, 19, 1912. The Chairman of the Clinic Committee, Dr. M. R. Brinkman, of Hackensack, has a number of prominent men booked and will try to make room for all who desire to clinic. Dr. Wentworth Holmes, Chairman of Essay Committee, has secured at least five papers of great interest, and expects others. Write at once and reserve rooms. —Charles A. Meeker, Sec'y.

THE ODONTOLOGICAL SOCIETY OF WESTERN PENNSYLVANIA.

The Odontological Society of Western Pennsylvania beg to announce that it will hold its Thirty-First Annual Meeting on Tuesday and Wednesday, April 9 and 10, 1912, at the Monongahela House, Pittsburgh, Pa. Drs. Mathew S. Cryer, of the University of Pennsylvania, M. H. Fletcher, of Cincinnati, Ohio, T. H. Terry, of Cleveland, as well as many local men, will present papers for the occasion. The clinics will be of the usual high character. Exhibitors desiring space for this meeting will kindly communicate with Jos. N. Katz, 1317 5th Ave., Pittsburgh, Pa., O. L. Hertig, Wm. W. Booth, Program Committee.

WASHINGTON UNIVERSITY DENTAL SCHOOL ALUMNI ASSOCIATION.

The annual clinic and reunion of graduates will be held under the auspices of the Alumni Association of Washington University Dental School, May 6 and 7, 1912, at the College Building, Twenty-ninth and Locust Sts., St. Louis, Mo. (The former dates of April 22 and 23, first decided upon for the meeting were changed to enable a fellow alumnus, Dr. G. V. Black, of Chicago, to attend as guest of honor.) This meeting promises to be unusually interesting, both in the way of papers and clinics, and all graduates should make a special effort to be present. All ethical dentists are invited to attend. R. A. Harris, E. A. Woelk, F. E. Meyer, Publicity Committee.

DENTAL LAWS CONDENSED AND DENTAL LICENSE REQUIREMENTS.

Since my last publication, entitled "Dental Laws Condensed, or Dental License Requirements," I have heard from the following countries:

Alaska, Algeria, Argentine Republic, Arabia, Australia, Austria, Barbadoes, Belgium, Bermuda, Bulgaria, British North Africa, Canada, the Provinces and adjacent islands, Cape Colony, Ceylon, Costa Rica, Cuba, Denmark, Dominican Republic, Egypt, England, France, Germany, Hawaii, Holland, Hungary, India, Italy, Jamaica, Malta, Mexico, New Providence I., Netherlands, Portugal, Russia, Roumania, Scotland, Servia, Sweden, Switzerland, U. S. Boards, Zanzibar.

One hundred and forty-four authorities, officially representing as many governments in the world, have furnished me with information in regard to the credentials a dentist must possess in order to practice dentistry in their respective countries. One hundred of this number have been heard from within the last sixty days.—Alphonse Irwin, D. D. S., 425 Cooper St., Camden, N. J.

RECENT PATENTS OF INTEREST TO DENTISTS.

1,006,857. Folding tooth brush, Savo B. Ljutica, Portland, Ore.
1,007,042. Tooth brush, Jeanette Mosby, Oak Park, Ill.
1,006,979. Dental suction plate, Carl Rauhe, Dusseldorf, Germany.
1,007,090. Tooth brush, Joseph Gaynor, New York, N. Y.
1,007,588. Blowpipe or torch, Arthur C. McGee, Olathe, Kans.
1,007,590. Dental cabinet attachment, William B. Miller, Altoona, Pa.
1,007,864. Tooth brush, Ernest S. Goldy, Philadelphia, Pa.
1,008,028. Dental bridge for teeth, Harry A. Gollobin and N. A. Bornstein, Newark, N. J.
1,007,824. Dental pliers for holding teeth, James W. Trosper, Tekoa, Wash.
1,009,008. Electric dental heater, Wladislaw and D. Asch, Berlin, Ger.
1,008,970. Composite dental foil and making same, John J. Kessler, St. Louis, Mo.
1,008,845. Dental filling material, Adolphus G. Meier, St. Louis, Mo.
1,008,663. Orthodontia apparatus, Theodore H. Montague, Blue Island, Ill.
1,008,569. Artificial tooth, Isidore Stern, New York, N. Y.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

GOLDEN ANNIVERSARY OF THE IOWA STATE DENTAL SOCIETY.

The Fiftieth Annual Meeting of the Iowa State Dental Society will convene at Des Moines, Iowa, May 7, 8, 9 and 10, 1912, beginning Tuesday, May 7, at 9 a. m.

The Coliseum with its large floor space has been secured for clinics, exhibits and lectures.

One day will be given over to the older practitioners and ex-Iowa practitioners as a home-coming event, to exhibit, lecture, clinic and banquet, to which all are urged to attend. This we expect to be one of our most interesting days.

The exhibits will be the largest ever given by any state society. Complete and extensive modern dental equipments, appliances and instruments will be shown and demonstrated. And in contrast a large exhibit will be made of equipment, appliances, instruments, etc. of fifty years ago, that will be highly interesting and educational and will be in charge of Dr. A. D. Clark, of Charles City, Iowa, who would be pleased to correspond with anyone who might add to this exhibit. The modern exhibits will be in charge of Dr. H. A. Elmquist, Master of Exhibits, Des Moines, Iowa, to whom application for space should be made at an early date.

Further information will be furnished upon request from ethical practitioners of other states contemplating a visit to the meeting and to whom we extend a cordial invitation. C. M. Kennedy, D. D. S., Secretary, 605 Citizens' National Bank, Des Moines, Iowa.

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THE MANAGEMENT OF CHILDREN'S TEETH.*

BY C. N. JOHNSON, M. A., L. D. S., D. D. S., CHICAGO, ILL.

If it is true that decay of the teeth is a disease of youth then the subject assigned to your essayist on this occasion becomes one of the greatest importance. Half the battle of saving a child's teeth relates to influences that are brought to bear on the teeth aside from the operations which are performed on them by the dentist. Fillings are, of course, all too frequently necessary. Without operative aid the teeth of many a child would go to destruction as surely as the snow melts before the sun, and yet one of the most important factors in saving the teeth of children lies in maintaining the full functional use of mastication. This introduces two advantages, the value of the friction produced by the food in passing over the surfaces of enamel, thus keeping them polished clean and bright; and the stimulation of the surrounding tissues so that the gums and pericemental membranes are kept at the highest state of health and efficiency.

In this connection I should like to diverge long enough to state that the maintenance of normal function in the mouth is of greater value in ensuring health of the tissues than the extensive use of mouth washes and other artificial means, not only in childhood but in adult life. The reliance upon antiseptic solutions to take the place of thorough mechanical cleaning of the teeth has been the means in too many instances of patients ignoring the benefits to be gained from the maintenance of function and mechanical cleaning and has lured them on into a false security. If the tissues are diseased there may be some philosophy in the use of mouth washes, but the constant "doping" so frequently indulged in by individuals who have no need of such things tends to do more harm than good. And this is especially true in the case of children whose tissues for the most part require more than anything else the establishment of function to keep them healthy, and who are injured more than benefitted by the habitual use of drugs.

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*Read before the Minnesota State Dental Association June, 1911.

If a child can be made to masticate thoroughly on both sides of the mouth so that the enamel is polished clean and the gums are kept hard and tough, the problem of saving the teeth is more than half solved. But, of course, this is difficult with the food of our modern civilization which is so prepared that it does not induce thorough mastication, and so we are driven to the use of the tooth-brush. And the proper use of the brush during childhood is of the utmost importance in maintaining the teeth and gums in a healthy condition. A child should be so drilled in the correct manipulation of the brush that the habit of oral cleanliness is established, and then in after life there will be little inclination to neglect in this particular. An individual with the habit firmly fixed of brushing the teeth before retiring at night can never go to bed comfortably unless the teeth are clean.

Incidentally it may be stated that with those who have formed the tooth-brush habit it may be necessary a little later when they have grown to take pride in the appearance of their teeth to caution against the improper and indiscriminate use of the brush. It is frequently the case that young society people in their efforts to keep the teeth perfectly white do great damage to the gums with the brush by forcing them away from the necks of the teeth and exposing the roots. This is, of course, due to wrong methods of brushing. The gums, on account of lack of proper exercise from imperfect mastication, require the friction of the brush, but this friction should be so applied as not to do injury. If the gums on the upper teeth are brush downward and those on the lower teeth are brushed upward they will be benefited rather than injured. This is a matter for the dentist to watch carefully, particularly among his young lady patients, where the gum tissue is frequently thin over the labial and buccal surfaces and where too much cross brushing is likely to cause serious recession. The constant supervision of the care of the teeth as indicated by the conditions observed in the mouth is one of the chief offices of the dentist in the management of children's teeth, and yet as before indicated there is often much to be done in the way of operative procedures.

In caring for the teeth of children two things are to be considered, the care of the deciduous teeth as long as they remain, and the care of the permanent teeth as soon as they erupt. There is a constant temptation to ignore the deciduous teeth for the reason that they are to be lost in a few years and that it is in many instances exceedingly difficult to accomplish satisfactory work with them in the way of filling. They are usually sensitive and the patient sometimes hard to control. Naturally at this tender age we do not wish to attempt anything of a heroic nature which will be calculated to develop a dread of dental operations. This is a matter of prime importance and we are often taxed to our utmost by the difficulties of the situation. And yet there is a certain consideration which can not be ignored. It is of the greatest consequence to the future well-being of the child that the deciduous teeth be kept comfortable for mastication. Aside from the question of pain from toothache and the other ills which follow, there is the factor of function which must not be lost sight of. A child with a decayed tooth intuitively avoids biting upon that tooth, and this throws the burden of mastication, which should be borne equally by both sides of the mouth, to one side. In case a tooth on each side becomes sensitive then the road to bolting the food without proper chewing is a very short one, and this habit once formed is likely to persist. Children at this impressionable age are creatures of habit and we cannot afford to force on them a habit so deleterious to their health as this by neglect of their deciduous teeth. These teeth have a function to perform in the economy of the child and we should see to it that in so for as we are able to do so, the teeth are preserved to fulfill this function.

We cannot hope in all cases to do work of a permanent character or even work which may be expected to last the number of years which the teeth are to remain in the mouth. I sincerely wish that we were able to do this because if there is anything discouraging and unsatisfactory it is the repeated patching up of these teeth with temporary expedients. And yet we are frequently driven to this by the circumstances of the case. In cavities involving the proximal surfaces of the deciduous molars we cannot even use amalgam in some instances. The cavities spread over much of the proximal area with little depth, and require considerable cutting for retention of amalgam. This we cannot always do, for two reasons—the sensitiveness of the teeth, and the danger of involving the pulp.

These cavities are of all others the most trying ones with which we have to deal in childhood. The cements are usually exceedingly temporary and yet we are sometimes driven to them by the exigencies of the case. The chief thing with these cavities is to keep irritating substances out of them and to make the teeth so that the paient can masticate food with comfort. Cement will do this at least for a time and thus something is gained. If the cavities are not large, of course amalgam is more satisfactory because of its greater permanence, but as has been intimated, it is not always possible to use amalgam.

In certain cases the judicious use of gutta percha will solve the problem better than anything else. Where two molars have decayed in the proximal surfaces facing each other, and the teeth have tipped somewhat together, the space thus lost in the arch should be regained, and this may most effectually be done by building gutta percha between the teeth from one cavity to the other. To prevent the putta percha from being driven up into the interproximal space and doing injury to the gum, a metal guard may be placed across the space, one end resting on the gingival wall of one cavity and the other on the gingival wall of the other and the gutta percha built over this. Gutta percha under such conditions will prove very satisfactory and the teeth will not only be comfortable for mastication, bu the lost space will be regained. But this material is capable of doing harm to the soft tissues by crowding up between the teeth unless the metal guard is used, and in some instances the wedging force exerted by it will press the teeth too far apart unless it is watched from time to time.

There can be no hard and fast rules for the practitioner to follow in the management of deciduous teeth owing to the varying conditions which confront him, and yet, as has previously been stated, he should be willing to devote his very best energies to the problem of keeping them comfortable as long as they remain in the mouth.

When the permanent teeth begin to erupt the one of all others which demands careful watching is the first permanent molar. This tooth is in many respects the most important one in the mouth, and for the reason that it erupts so early in life it is frequently mistaken for a temporary tooth and allowed to go by default. By the time the first permanent molar comes in and decays the child is of an age which gives the impression to the parent that all the temporary teeth are to be shed before very long and there is little to be gained by filling this tooth when it has, in their minds, so short a tenure of life. This false impression regarding the temporary nature of the first permanent molar has cost many an individual a perfect masticating equipment all his life, and it is the duty of the dentist to educate mothers regarding this important matter. One of the chief functions of a dentist, if he is living up to his highest possibilities, is to be an educator, and fortunately at the present time there is a very encouraging awakening in this respect. Much is being done in educating the public regarding the importance of the teeth and how to care for them, and never before in the history of the world, did the public display so lively an interest in the subject. And in every pamphlet and every public lecture, and particularly when mothers or children are in the dental chair, this subject of the first permanent molar should invariably be emphasized till its importance is recognized by every one.

The loss of this tooth involves greater damage than at first glance seems apparent. Not only is there a serious interference with proper occlusion following its extraction, but if it is lost before the second permanent molars and the bicuspids are fully erupted, there is inevitably a dropping together of the jaws which results in a weakening of the physiognomy of the face. It is the main factor in holding the jaws properly apart during the period when the deciduous molars are lost and the other permanent teeth are not fully erupted, and when it is removed prematurely and the jaws are allowed to fall too close together there is a consequent loss of character in the contour of the face. If retained till the other permanent teeth are in and then extracted, it invariably disarranges occlusion. The second permanent molar and the second bicuspid always begin to tip toward each other and this changes the relation of their occlusal planes so as to interfere with proper articulation. Even in those cases where the second molar and second bicuspid eventually come into proximal contact there is never a perfect relation of the occlusal surfaces of the upper and lower teeth. An examination of models made from such cases will sometimes indicate a very fair occlusion when viewed from the buccal aspect but if these same cases are examined lingually there is invariably found a serious discrepancy and a wide variance from the normal.

The importance then of preserving the first permanent molar cannot be sufficiently emphasized and no amount of trouble should be considered too great to accomplish this end. It forms one of the chief problems of the care of children's teeth, and it is therefore a fitting subject at this time to consider the best means of preserving it. This is a very simple matter provided the patient is brought to the dentist at frequent intervals for examination. In children where the tendency to decay seems to be great, as indicated by many cavities in the deciduous teeth, the first permanent molars should be protected the moment they erupt through the gums. The place where they are most likely to decay is in any pit or fissure in the occlusal surface, and this is particularly true in those cases where these pits are deep and well-marked. In such teeth the pits and fissures should be carefully washed out with alcohol and cleaned as well as is practicable with a fine explorer without using a drill or excavator, as soon as the occlusal surface of the tooth is exposed. The alcohol should then be evaporated and the occlusal surface made as dry as possible, after which cement should be forced into the fissures and the entire occlusal surface of the tooth covered up even with the marginal ridges of enamel. This will protect this surface from decay till the tooth reaches full occlusion with the tooth of the opposite jaw when the cement will, of course, soon be worn down even with the fissures. Here it will remain for some time and in many instances it will tide the tooth over a very susceptible period and render unnecessary any extensive filling operations. It is a fact well worth careful study that in many of these children where the deciduous teeth have been discouragingly bad and where it has been almost fruitless to try to save them, if we watch the permanent teeth as they come in and give them careful attention we are often able to stem the tide just at this time and preserve the permanent teeth without any very extended fillings. This change in the manifestations of susceptibility is well worth watching and though it usually comes at a period later than the one indicated, yet we can often advance it by several years by a careful management of the case through frequent examinations of the teeth and filling cavities the moment they appear, as well as by proper use of the teeth in mastication and the necessary prophylactic measures on the part of the patient. Normal function is the keynote of success in these cases and the dentist should see that the teeth are kept comfortable for mastication so that this function may be fully performed.

But the question naturally arises: What shall be done with those cases which come to the dentist only after serious inroads have been made in the teeth by caries? The answer is to do the best we can by the particular method which in our hands has proved the most effective. Two things are of greatest importance—to stop the decay and keep the tooth comfortable for mastication, and to do this with as little discomfort to the patient as possible. It is a thousand pities that we cannot always do permanent work on these teeth at the beginning. To do work which is temporary is often to create in the mind of the patient an impression that dental service is not very effective and this is unfortunate, but on the other hand to attempt to make our operations permanent at the expense of the nervous equilibrium and fortitude of our patient is worse. Dental operations are at best not very agreeable and if we add to the natural dread of such work by a too heroic application of our ideals in technical perfection we are likely to do more harm to the patient than good. As the child grows older we can usually gain a better command of the situation and as fast as we find it safe to do so we should dispense with temporary expedients and make our work as permanent as possible. After all the control of children is largely a matter of individual study and it is a study well worth the consideration of every dentist. To bring up a child under your professional care and have that child reach adult life with a full set of natural teeth in good condition for effective mastication and presentable in appearance, is no mean achievement, and it should be the ambition of every dentist to have as many of these cases in his practice as he can. It is the highest expression of professional attainment as applied to dentistry, and it means more than most of us realize for the betterment of the race, not only in a physical sense, but mentally and morally as well.

Time will not permit me to go fully into the methods to be employed in saving the teeth of children. I sometimes think that the materials indicated for use in children's teeth are limited only by the materials we have at our command, because there is hardly a material which at various times is not serviceable for this purpose. In the case of badly broken down molars the choice is between amalgam and gold inlays. Whatever may be our conviction regarding the virtues of the gold filling and the gold inlay, the restoration of large contours with gold foil for children is not often advisable or even possible.

As between amalgam and the gold inlay there can be only one consideration in favor of amalgam and that is a financial one. The gold inlay lends itself to the problem of managing these cases for children in a more acceptable manner than any other means at our command, and it is the one place where no argument is needed to endorse its selection. In those ca ses where the occlusal surfaces have been so involved by caries as to permit a slight dropping together of the jaws the gold inlay may be utilized to build up the teeth to their proper form and thus maintain the jaws in their correct relation. It is not here intended to discredit amalgam—a material which has been the humble means of saving many a tooth which otherwise would have been lost—but I always look upon it as a sort of triumph of the operator if he can carry a mouth on to adult life without inserting amalgam. It is not so reliable under heavy stress as a cast gold inlay, and so far as appearance is concerned the mouth which has gold in the teeth looks infinitely cleaner and more wholesome than one where amalgam has been used.

In the present paper it has been been possible to touch on only a few of the points in a problem the most important of any which confronts the dentist. To fully understand the significance of the teeth of childhood as it relates to the future welfare of the individual, to meet the varying adverse conditions which frequently confront the operator in his management of these cases, and to finally triumph over all obstacles and carry the patient through the susceptible period of life into the safer harbor of immunity is one of the highest offices the dentist is ever called upon to perform. To devote one's best energies to the care of children's teeth is to practice dentistry in its greatest usefulness.

A DISCUSSION OF THE INFLUENCES THAT DISEASED CONDITIONS OF THE MOUTH, NOSE AND THROAT, HAVE ON THE INDIVIDUAL WELFARE, AND A CONSIDERATION OF THEIR RELATION TO THE COMMUNITY'S HEALTH.*

BY F. D. RICH. M. D., JOLIET, ILL.

In a paper on a subject of such importance, to an assembly of men who are perhaps more familiar with the matter than I am myself, I feel that in the short time allotted to me I should touch upon only a few of the items that might be included in a title so broad.

I wish to express my thanks and appreciation of the honor you confer upon me this evening. It has always been my belief that dentistry and medicine should be closely related professions. Indeed, I should welcome the day when the study of medicine should be made broader and include all these special branches of the art of healing, which are worthy of recognition, each student adopting that particular special field of the great work to which he feels himself adapted and inclined. No State license should be issued to practice any part or fragment of the art of medicine and surgery to anyone who is not a graduate of one of its great colleges; and I believe the only State Practice act that can approach success at being enforced will be one which grants a license to any graduate of a recognized medical college, and which withholds the right to practice from all others. Then when members of this profession, which includes the dentists, change their attitude toward each other from that of competition and professional jealousy, to that of cooperation and mutual help, confreres and co-workers in the "Good Samaritan" field of relieving suffering and saving life, they will command and deserve the respect of the community to a far greater degree than at present.

I cannot resist the impulse to speak of your honored president. It has been my privilege to know him somewhat intimately, and I regret his illness keeps him away tonight. But I am glad to know he is getting along as well as possible, with excellent prospect of eventually being greatly improved in health. He has been reading much of late in the dental journals about the business or financial aspect of professional work. He has been trying to adopt methods and ideas which are strange and foreign to the great heart which beats in his dear old Irish breast, and thinks he is becoming as mercenary as the most soul-less trust. As a warning to him, and to those who would imitate his ways, I quote the verses from Ben King, which he attached to a bill he recently sent to one of his delinquent patrons:

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*Read before the Will-Grundy County Dental Society Nov. 14, 1911.

"If I should die tonight
And you should come to my poor corpse and say
Weeping and heartsick o'er my lifeless clay—
If I should die tonight,
And you should come in deepest grief and woe
And say: 'Here's that ten dollars I owe,'
I might arise in my large white cravat
And say: 'What's that?'

"If I should die tonight,
And you should come to my poor corpse and kneel,
Clasping my bier to show the grief you feel.
I say, if I should die tonight,
And you should come to me and there and then
Just even hint about paying me that ten,
I might arise the while;
But I'd drop dead again."

Instead of having the desired result, the patron sent the following reply:

If I had died the night before
The day your letter reached my door,
You'd feel yours was an awful plight
If *I* had died that night.

My vast estate, my wealth untold,
Which I would leave when I was cold,
Prompt payment would insure alright,
If *I* had died that night.

Perhaps to you the size of ten
Is bigger than to most of men.

To me it would be but a mite
If *I* had died that night.

Twice thought I the coin to send,
My one indebtedness to end;
But each time spent it to get "tight",
Thinking that I'd die that night.

But since I've learned a shock so great
A prompt remittance would create,
I do not like to pay you quite,
For fear that you might die of fright.
So, Wait.

I need not take up in detail the many varieties of bacteria that may be harbored in the mouth, nose and throat. We, as professional men, recognize their presence, and the possibility of their becoming active in their various spheres of endeavor at any time when the resisting power of the organism, local or general, becomes impaired. Bacteria lurk in the crevices of the teeth, in tooth cavities and around the gums, finding abundant culture media in the decomposing remnants of food which lodge there in the unwashed mouth, and cause loss and destruction of the teeth through disease and decay. Imperfect teeth means imperfect mastication of the food. This, of course, impairs the digestion through under-stimulation of the gastric glands from deficient admixture of saliva with the food. The result is the poorly nourished and half-starved child with its tendency to contract such diseases as tuberculosis, pneumonia, and diseases common to childhood. The palatal arch is many times deformed, and when too high, it obstructs the nasal passages, causing facial expression and symptoms very similar to, and often mistaken for enlarged adenoids. In the nose and throat, the adenoid vegetations and tonsils are favorite sites for the bacteria and the activity of pneumococci, staphylococci, etc., lodged therein are frequent causes of tonsilitis, peritonsillar abscess, pharyngitis, middle ear abscesses from extension of infection through the eustachian tubes, pneumonia, etc. Enlarged tonsils and adenoids are sources of trouble also in the middle ear by their mechanical obstruction to the eustachian tubes, deafness in some degree always attending such a condition. These growths, hypertrophied or diseased, with mouth breathing almost always incident thereto, render the throat, larynx, and bronchial tubes liable to irritation and infection from dust and inadequately warmed inspired air and tubercular infection is common in these children.

Diseased conditions of the ethmoid cells, polypi, etc., and extension of infection from the nose to the eyes through the nasal duct are frequent and many times blindness results through pressure or infection from this source.

One or several of these conditions may be present in childhood and can easily be recognized by proper examination. The child's health is never up to the standard when the breathing apparatus is handicapped by a mouthful of diseased or hypertrophied tonsils and adenoids. His mental state is subnormal and he appears stupid and his education despaired of early in life and he is classed as one of the "backward children." By these unhealthy conditions of the mouth, nose and throat, the individual health is impaired, oxygenation of the blood is deficient, nutrition poor, and development, mental and physical, is more or less arrested. The health and physical development of the individual governs to a great degree his education and his usefulness to the world. Many a child has become degenerate or lived a life of inferiority or criminality, who might have developed into first-class material for citizenship had attention been given in childhood to his organs of mastication and respiration. The direct and indirect results of neglect of these parts are too numerous to bring out in detail in a paper as brief as I have endeavored to make this one. But those emaciated, undersized, underdeveloped, dyspeptic individuals one sees on all sides every day bear pitiable testimony to the ignorance or carelessness of parents or family physicians in these matters.

As the individual, so is the community. The public health is dependent upon the health of the individual. Tuberculosis being a very common development in these neglected individuals, the public should protect itself against that insidious, deceptive, unrelenting and well-night irresistible infection by taking measures to eradicate it. Provisions should be made for the medical examination of the children in their earliest school years. Some means should be provided for dental, surgical and medical care for those financially unable to avail themselves of such attention. The city or county or state should assume some at least of the responsibility now imposed almost entirely upon the dental and medical professions.

The main points to be emphasized are that these conditions are a real and serious menace to the health, development and general welfare of the individual and community; that in proper treatment, care or operation there is found certain relief, and cure in a great majority of the cases; that parents who are able to provide, are not doing their full duty to their children and to the public when they are neglectful in these respects; and the community is derelict when it does not inaugurate some adequate system of examination of all school children, and furnish these remedial measures to its dependents.

A SUGGESTION IN DENTAL EDUCATION.

BY J. P. HARPER, D. D. S., ST. LOUIS, MO.

One of the characteristic expressions of social need due to the growing complexity of modern social adjustments is to be found in the insistent demand for increasing elasticity in the courses of study and student relations of educational institutions. One of these demands, to which both academic and professional schools have responded with different degrees of liberality, is that which calls for scholastic administrative readjustments which provide for a mid-year admission and graduation of students in addition to the customary fall and spring admission and graduation respectively. Many academic and professional schools, including those of medicine, have either actually introduced the system, are taking steps to do so, or at least approve of it in principle through the expression of representative members of their faculties. Dental colleges have in the past taken an independent and aggressive attitude, keeping the practical aspects of dentistry quite prominently in the foreground. These colleges have, however, been notably reluctant to introduce this very practical measure into their administrative and educational arrangements.

The pertinent question, what are the merits of the plan of admitting and graduating students twice a year, therefore comes to those of us who are interested in the work and success of dental schools. Answers may, of course, be given from different points of view. The writer shall in the first instance seek his answer from the standpoint of the college's efficiency measured in terms of justice to the student, professional uplift and obligation to society, and, in the second, from the standpoint of the practices and opinions of the professionally kindred schools of medicine.

It is evident that there is no reason in the nature of the case why a student should not begin a definite course of study in February as well as in October. There is, furthermore, no reason to assume that a course begun in the fall will be carried on more successfully by the student than one begun in the mid-winter season, and a graduate entering upon his profession in February is quite as likely, other things being equal, to succeed as one entering upon it in June. From these standpoints there can be no possible objection to the mid-year admission and graduation of students. But, on the other hand, traditional practices are out of harmony with it; and there can be no doubt that the duplication of work which it involves complicates administrative problems and increases expenses for equipment and maintenance. While custom and expediency are insufficient grounds upon which a measure may be finally approved or condemned, they do have a claim upon our attention and in a measure justify conservatism, unless it can be shown that for other reasons the new departure is not only admissible, but also distinctly advantageous.

Whether the suggested two-term system is desirable or imperative must therefore be established by those higher criteria of judgment that have in view the fundamental function for the efficient exercise of which dental colleges exist. Broadly stated, this function consists in preparing the student, without loss of time, to achieve in his chosen field of hygienic endeavor that degree and kind of personal success which makes for maximum service to the community. Or, stated differently, the merits of our dental schools must be estimated in terms of maximum efficiency in fulfilling the mission that has been entrusted to them. And the concrete question from this point of view therefore is: How are the factors that contribute effectively toward the maintenance of maximum efficiency linked up with the suggested practice of admitting and graduating students twice instead of once a year? The bearing of this question and of its answer upon the work and continued success of our dental schools cannot with impunity be ignored by them.

The education of dental students, contrary to that of students in many other lines of work, involves the acquisition of both scientific scholarship and a high degree of digital skill. It is often difficult and sometimes impossible to bring about a combination of these two characteristics in one individual. Some of the more industrious students accordingly find themselves approaching the end of their three years' course acceptably proficient in one, but only indifferently so in the other aspect of their work. Others, not positive failures, are weak all along the line. If high standards are to be maintained, such students cannot be graduated unless they give to their college work a longer time than usually prescribed for its completion. But it is plainly contrary to elemental principles of justice to withhold the diploma for a whole year if the deficiency is one that can be removed in half a year. Some schools, dental as well as others, issue diplomas at the end of the established course whether the work has been well or poorly done. Other academic and medical schools, observing a higher standard, insist on longer preparation and, if the work of the delinquents is finished in half a year, sometimes quietly issue a diploma as a matter of grace and by special act of the faculty. In both instances the system of annual, instead of semi-annual, graduation is impliedly condemned; in the one by lowering the standard and defrauding the community; in the other, by special legislation in order to escape the injustices of an antiquated administrative system. So far, then, as the students' time is concerned, we conclude that it is out of harmony with the dictates of justice to adhere uniformly to the practice of admitting and graduating students only in the fall and spring respectively.

But it is also certain that the instructor's natural desire to shield the student against injustice of the kind referred to insidiously promotes the introduction of easy-going standards of judgment. Grading and marking in academic schools shows that the standards of different professors and in different departments vary widely,[1] and that there is a constant tendency to overrate, particularly if the consequences of the professors' judgments are likely to be either humiliating or injurious to the students concerned. This tendency was pointed out by Prof. W. LeConte Stevens[2] in referring to a Virginia school which required the division of its students into classes of

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[1] Grading of Students, Science, N. S., Vol. 28:243.

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[2] American Titles and Distinctions, Pop. Sci. Mo., Vol. 63:312.

varying degrees of merit and demerit. "The continual tendency", we are told, "was to mark inferior scholars too high. Thus it came to pass that *bonus,* though a mark of approbation, came to be considered as a disgrace, while *optimus,* which ought to have been reserved for scholarship of the highest merit, was commonly bestowed on all who rose above mediocrity." And after the system was changed by the substitution of the three grades "disapproved," "approved," and "distinguished," it soon developed that "bad scholars were approved and good scholars were nearly all distinguished." The same has been and still is true of other institutions.[3] A student of known capability who fails in one subject is not infrequently given a pass if the refusal to do so might entail serious consequences for him. It should be remembered that in this field, as in others, the tendency to inflict punishment is inversely proportional to the severity of that punishment. The grade is a numerical estimate and the student naturally receives the benefit of the doubt. An estimate which is possibly false is preferred to one which is possibly unjust.

We are not to flatter ourselves that dental colleges are free from these influences. The same, and possibly greater, weaknesses exist. They are revealed in the progressive tendency either to shift to an extraneous examining board the responsibility of postponement or elimination, or, what is worse, to pass mediocre students, graduated *speciali gratia,* out into the practice, hoping that somehow their deficiencies will be removed or, at least not revealed. That this conclusion is one of fact and not of speculation is very significantly brought out by a recent report of the Tabulating Committee of National Association of Dental Examiners showing that over 40 per cent of the tested graduates of some dental schools failed to pass. It is surely a matter of serious import that four out of every ten of those holding the testimonial which a diploma should imply were unable to meet the kind of test which it was known would be applied to them. Can we avoid the conclusion that much of the teaching was inefficient and that many cases of easy-going standards of student attainment were applied? Neither can we avoid the further conclusion, on the basis of the principles already stated, that graduating students once, instead of twice a year, greatly accelerates this deterioration of standards. Students are graduated somewhat too soon in order to escape the injustice of graduating them somewhat too late. The remedy, therefore, in so far as this particular influence is concerned, is to adopt the more elastic system of two graduations in the year so that the instructor may be freed from the dilemma of injuring his student or of lowering his standard.

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[3] Science, N. S., Vol. 29:372; Educational Review, Vol. 33:386; Popular Science Monthly, Vol. 66:367; Vol. 73:528, etc.

The purely negative effort of preventing a lowering of standard, though important, is inadequate. Our sense of obligation and of professional pride requires us to raise standards all along the line. On the one hand are consideration of justice to the student, on the other are obligations to the state; and in both of these are involved the general promotion of scholastic as well as technical ideals. The fulfillment of this obligation is conditioned on the maintenance of maximum efficiency, which is expressed in the standards by which qualifications of students are estimated, and which is made possible by an adequate equipment as well as by those administrative and scholastic adjustments that afford opportunity for constant, close and stimulating contact between student and teacher. The more frequent admission and graduation of students is a highly important factor in bringing about this condition. The adoption of such a system requires the carrying on of parallel as well as consecutive courses of study, and this, in turn, implies an increase in the size of the faculty. Both of these are distinct advantages—practically and scholastically—in enabling the student to do his most effective work.

Other advantages are obvious, and the enumeration of all of them is unnecessary. But some of them deserve consideration. Every course will necessarily be given concurrently at two stages of development, half a year apart. Students who have done indifferent work as well as those who have actually failed in some subject could easily take this subject over at the beginning of the new term, and at the same time continue their advanced work. Those who have failed in a more pronounced way would not necessarily need to lose more than half a year. The instructor recognizing and taking advantages of these possibilities, would naturally incline to more and more exacting requirements, refusing wholly to pass those who are below par and urging others to take certain branches of their work over again. The general effect of such measures, together with a concomitant and resulting spirit of industry and thoroughness, cannot well be over-estimated either in relation to the faculty or to the students.

It may be answered that all of these results can be accomplished under existing conditions if sufficient pressure is applied by those managing the college. But merely to demand good work is clearly ineffective, except in so far as coercion urges students on. Coercion is not ideal. Neither is it sufficient. Providing a suitable equipment that makes it possible for the student to do his best work is the indispensable condition that the student has the right to exact of the college, and society the right to impose upon it. We cannot rightly or safely shift upon the student the whole burden or responsibility of getting results. The student seeks a training that will enable him to successfully carry on his profession, and the college agrees to give him that training. Its duty therefore is to give the student every opportunity along practical and theoretical lines. It should not only finally exclude those who fail, perhaps according to a low standard at that, but should also have solicitous regard for all who show weakness in any phase of their work, whether they actually fail or not. In no other way can a college justify itself on high or advanced grounds. Carrying parallel, continuous and consecutive courses together with close supervision of the work are conditions necessarily involved in or made possible by the two-term system which the writer is advocating. Its adoption would therefore constitute a distinct step in advance, and effectively help to place dental colleges on a higher plane than they now generally occupy.

A second and decided advantage of the system is the decrease in the number of students per teacher at any given moment of time: not at all a decrease in the total number of students, but a better distribution of them. On the one hand the number of instructors would in certain instances have to be increased on account of the multiplication of classes, from which a reduction in the average number of students per teacher would automatically follow. On the other hand, new students admitted at half year intervals would fall into two groups, those entering in October and those entering in February. While under existing arrangements all of them fall into one group and, unless the institution is quite large, into one class. A redistribution of students or classes by which the number of pupils per teacher is reduced is obviously of preeminent educational value. It makes possible a great increase in the teachers per pupil points of contact, which is a desideratum of the first rank with academic and professional schools of high standing. The record of every man can be individually studied, his strength and his weakness carefully determined, and the particular influence brought to bear which will increase the one and diminish the other. The student's frequent contact with an exalted personality, a great scholar or a conscientious, thorough teacher cannot fail in three years to build up in the student correct ideals of moral and professional success. And close daily supervision, supplementing these other influences by directing daily efforts toward the realization of these ideals, will give to them compelling force and definiteness in the individual's student and subsequent life. From this point of view the adoption of the proposed two-term system would put the dental college in a position of enviable educational power.

In schools like those of dentistry that necessarily give much of their time to practical manual work there is a constant and natural danger of reducing other sides of their work to altogether subordinate positions. Work involving manual dexterity and skill is seen and therefore emphasized. The other may easily go by the board as is clearly enough indicated by the results of examinations before the official examiners. To ignore the existence of this tendency and to fail to counteract it will in the long run create a demand for dental colleges of a higher type than those which in many instances are now in operation. Those who have the welfare of our profession at heart will earnestly strive to uplift it; those who have the welfare of our dental schools at heart will seek to improve them. This was evidently the thought of Dr. Kirk[4] in his address delivered at the dedication of the new building of the Royal College of Dental Surgeons at Toronto. His plea, which is well worth reading, is for a more thorough grounding in the medical fundamentals and for a higher scholarship generally. Our schools adhering to the old practices may and do prepare their students thoroughly in the manual aspects of their work. Few of them go far beyond that. How many produce scholars who are an ornament to the profession? How many prepare their students adequately even in the primary scientific fundamentals upon which their practices must ultimately rest? If they do not, how long can they retain the public confidence? Further: How long can we remain outside the current streams of educational influences and tendencies? Are we within the classification of the higher profession? If not, how long will our pride permit us to remain outside of them? So long as we refuse to deviate from the old well beaten paths, so long as we permit supposed private financial gain to stand in the way of administrative and educational measures of reform surely not much hope or encouragement is given to those who stand out for the value, the dignity and scholarly advancement of our profession.

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[4] Science, N. S., Vol. 31:481.

If the course of study is so adjusted, as proposed, that students may be readily encouraged or required to take up additional subjects deemed important by the faculty a genuine educational and professional advance will have been achieved. While every student should inflexibly be required to take the full regular three years' course, it is nevertheless desirable to consider the kind of work done quite as much as the number of hours put in. Our present methods eliminate the poorest students, but give to those who are nearly as bad—and possibly worse—as much credit as is given to the best. We should make our administration so elastic and have our courses so duplicated and adjusted that all students may be leveled up: that the fair may be good; the good, better; and the better, best. We should apply the standard of Dr. Jordan, that education means opportunity, that the student be helped and required to do his part, and that the degree should be the seal of approbation of a high grade of work efficiently done and not a testimonial of years of idleness or of indifferent work.

Whether dental colleges ought to consider the two-term system favorably may also be determined in the light of the actual practices and preferences of medical schools. Their work is kindred to that of dental colleges but covers a much wider field. The suggested plan therefore involves far greater problems for medical institutions adopting it than could possibly be the case with dental schools. Favorable action or opinion on their part should therefore bear great weight with us. The writer wishes on this account to cite the evidence that was brought out in correspondence with twenty-five highly reputable medical schools located in different parts of the United States. Six of the twenty-five have adopted the plan in whole or in part, and others refer to the custom of conferring degrees, during the course of the school year, upon those who for one reason or other failed to get them when the class graduated at the preceding commencement in June.

At Rush Medical College the year is divided into four quarters, and students may enter at the beginning and graduate at the close of any one of them. The plan works well and while most of the students graduate at the close of the summer and winter quarters, a representative number graduates at the close of the other quarters. The Chicago College of Medicine and Surgery divides the year into three parts of four months each. Students may therefore enter or graduate in September, February, or May. But public graduation exercises are held only once a year. The trimester division has been adopted by the Washington University Medical School, and students may be admitted at the beginning of any one of these terms. At Harvard University Medical School degrees are regularly awarded in February as well as in June. Students are expected to begin their freshman year in October, but are not uniformly required to do so. Johns Hopkins University has for some years been at work readjusting its medical courses so that students may regularly enter and graduate every trimester. These divisions in every case include one-third of the year. The readjustment has gone to the extent of now permitting graduation at Christmas and Easter as well as in June. The degrees are formally conferred twice a year, at the commencement in June and on February 22d; but the student actually receives his degree as soon as his work is finished. The announcement of the fact is merely deferred until June or February as the case may be. At present, however, beginners are still rarely admitted at any other time than the beginning of the year. The University and Bellevue Hospital Medical College graduates its students in the spring and in the fall, although students are not permitted to enter in the mid-year. We have, therefore, a number of highly reputable medical schools that follow either wholly or partly the practice of admitting and graduating students at least twice a year, some making it three times and Rush Medical College as often as four times a year. Surely the restraints of timidity should not prevent our dental schools from following the lead of institutions like those just mentioned.

All of the twenty-five medical schools were also asked to express their opinions of the plan of admitting and graduating students twice a year. It was most interesting to see that not one condemned the plan itself. Eleven approved of it absolutely, two expressed no opinion, and the remaining twelve merely remark by way of qualifying their approval that the plan is "troublesome," "a big task," "expensive," etc. That these are not fundamental objections is, in cases, admitted by the writers themselves, who deplore the very limitations to which they refer. In a number of instances the preference is indicated in emphatic terms. "Of course," says one, "we do see the advantages in allowing the students to graduate at the end of each semester. I feel that this is more just to the student than our present system, and I do wish that we could get rid of that hard and fast time standard of work accomplished." Another states that in relation to "backward students" the system "would certainly be a distinct advantage." From a leading institution comes this statement: "Personally I feel that courses in medical schools are too stereoptyped. I see no reason why there should not be as much flexibility in the medical curriculum as in the usual academic courses. Students should be allowed to enter upon any course in the medical school at any time convenient to them and their instructors." From still another such school comes the statement that, "At present our courses are still too much under the influence of the old routine, but I think there is a general movement to make them more elastic." Other quotations to this effect could be given at length. But enough has been offered to show that medical schools are awake to the situation, and that as time goes on more and more of them will readjust their courses so that students may be admitted or graduated at two, three and even four distinct seasons of the year. Are we in the dental colleges willing to lag far behind in the readjustment? If we are willing to do so, can we afford it?

Secondary and other higher academic schools are accommodating themselves in large and rapidly increasing numbers to the needs of the times by dividing the year into at least two distinct terms. This arrangement avoids the loss of time which was formerly occasioned by requiring students in every instance to wait until September or October to begin their academic work. On this account, and for other reasons too, an increasing number of young men are now ready to take up their professional studies at the end of the first term. The consequence is that nearly all who wish to attend dental schools are required under existing conditions to wait until the following October to enter upon their professional studies.

Progressive representative academic and professional (not dental) colleges, mindful of the ills of unduly postponing the student's participation in the world's work, permit students to acquire credits in one department for work done in another. Such institutions also, in some cases admittting students as "specials," could, if they chose, incorporate dental departments and put out of commission all schools of dentistry in which such special arrangements are not possible. Our independent dental colleges, wedded to antiquated systems, would suffer the natural and inevitable consequences of competition between lower and higher forms of organization. The writer's plea is for the survival of these colleges, although the indications of times suggest their elimination by the substitution of more modern, efficient institutions, responsive to demands for technical efficiency and scholarly attainments. We should not forget that the need for practical efficiency has permitted the "practical" to arrogate to itself a position in dental colleges that is subversive of the best ideals and results, so that the student, supposed to be trained during three years in all departments, is literally trained in only one—digital skill. When the diploma is regarded as no longer offering conclusive evidence of scientific training, the first steps in eradication of colleges awarding such diplomas have already been taken.

Nevertheless the outlook is not so disturbing, as it is surely coming to be realized that that is most practical which not only in the long run squares with the demands of science, but which is a definite development on the basis of science. To make trade instead of professional schools out of our dental colleges is no doubt generally recognized as a suppression of their best function. It is coming to be more and more our conception that the college as a social instrument must be definitely integrated with references to existing social conditions if its work is to be properly done. Following this thought no less an authority and scholar than Dr. Flexner[5] maintains that medical colleges should in their location and even in their course of study be adjusted to the needs of the communities around them. Dental schools have the same problem in a more general way. They will increasingly accommodate themselves to local conditions and to the needs of their students. They will see that their standard should emphasize not the season at which the student enters, but his qualifications and preparation when he does enter; and they will in the future all act upon the principle that there should be fixed theories of capacity and efficiency besides those that have reference to financial expediency, manual dexterity and to holding a student the maximum length of time. A new type of dental school is before us, one that will act with the consciousness of itself as a social instrument, and that will aim to couple high culture with practical success. New fields of science that have in view preventive rather than corrective hygiene are certain to make a larger claim than hitherto. The better, progressive dental collges, those that are adaptable and ready to meet the demands of science and of society, are destined to produce dentists of a higher type, who will carry into their work exact scientific knowledge, manual dexterity and a spirit of devotion and loyalty that will give to our profession ample opportunity to realize its best possibilities.

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[5] Science, N. S., Vol. 32:41.

VICARIOUS FUNCTION OF THE LUNGS, AS BEARING UPON FETID BREATH.*

BY W. V.-B. AMES, D. D. S., CHICAGO, ILL.

Physiologically, the furnishing of oxygen to the blood and the expulsion of carbonic acid gas is the function of the pulmonary apparatus. In health there is no disagreeable odor imparted to the expiration by materials taken from the blood or lung surfaces. When fetor of the breath (halitosis) exists, and there is no local condition between and including the lips and external nares, and the ramifications of the pulmonary lobules to account for it, it then becomes necessary to consider the abnormal conditions of the organism which might burden the lungs with the vicarious function of eliminating normal waste products and by-products of abnormal processes of the organism.

Before dismissing local causes from consideration, it is well to grant that an eructation of offensive gas may come from the stomach of some individuals with annoying frequency, but that in the condition in which each expiration brings evidence of blood taint, these occasional eructations may be dismissed from the consideration of the cause. The sphincter at the cardiac orifice of the stomach, normally bars the free passage of gases.

Fetor of the breath is often dependent on the accumulation in the system of its waste products formed by the cells as a result of metabolism, because of the emunctories being already surcharged with these products and those of normal as well as abnormal digestive processes. The abnormal products are almost entirely the end products of fermentations of carbohydrates, and of the breaking down of proteids, a process which is attended by the formation of substances which give off an extremely unpleasant odor.

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*Read before the Odontological Society of Chicago December 12, 1911.

In accomplishing the production of useful and assimilable substances, microbic digestion decomposes also the by-products of the digestion of the proteids into fatty acids, leucomaines and ptomaines, substances only fit to be promptly thrown out.

Hygiene of the oral cavity and a selected regimen may reduce very beneficially the number and variety of micro-organisms present in the alimentary canal.

There are many means whereby the organism is prepared to arrest the entrance of micro-organisms, or in the event of such entrance, to inhibit their growth. The gastric juice is particularly active in destroying bacteria, so that with this secretion normal, the alimentary canal is safeguarded. In gastritis, or with an insufficient secretion from any cause, the micro-organisms from without are not only not destroyed, but escaping into the small intestine they find alkaline contents favorable to growth and proliferation.

The poisonous waste products of cell activity are normally carried by the venous blood to the liver and there rendered inert by the bile and carried to the intestinal tract for elimination. With the large intestine and the kidneys properly performing their duties, this waste and the poisonous end products of microbic digestion of proteids are disposed of.

It happens, however, that a stasis of any emunctory, and especially a stagnation of the alimentary canal, is favorable to microbic multiplication and activity. The result of such activity in the large intestine is the formation of poisons, mostly volatile or gaseous.

The blood we have seen is capable of carrying and eliminaing carbonic acid gas and it is well recognized that in many conditions the blood carries to the lungs volatile waste products to be there eliminated with the expired air, carbonic acid gas, etc.

If a permeable membrane, such as the wall of the large intestine, separates two volumes of any gas, or two solutions of any gas at different pressures, the molecules of the gas will pass through the membrane in either direction until the pressure on the two sides is equal.

The veins of the rectum return their blood in part, via the internal iliac and the vena cava inferior, and in part via the inferior messenteric vein and the vena porta to the liver. With the liver functionating normally, and the excrementitious matter carried by the blood not being excessive, the blood passing to the heart and lungs is not in condition to seriously taint the expiration. In serious autointoxication, however, the air and carbonic acid gas expired by the lungs is vitiated by other gases which contribute to this intoxication.

These possible conditions should interest the dentist from the standpoint of his personal condition and that of the patient's whom he serves.

The dentist may take scrupulous care of his oral cavity, may abstain from alcohol and tobacco, he may have no pathological nasal, tonsillar, pharyngeal or lung conditions, and yet give forth exhalations which ought not to be inflicted on a patient. A patient may be equally free from like conditions and have a breath from exogenous and edogenous poisons being thrown from the lungs which the physician may have overlooked, but of which the dentist may be only too conscious, and which for his own good as well as for the good of the patient, he should as diplomatically as possible attempt to have corrected.

In becoming specially interested in this subject, it has been surprising to find that this aspect of the cause of fetid breath has been scarcely noticed in dental and very little more in general medical literature. In a search of the *Dental Cosmos* from 1869 to date, various prescriptions for washes for local use were encountered but only one article, that by H. Jerome Allen of Washington, D. C., "Foetor Ex. Ore. Pathology and Therapy," Vol. 38, p. 626, read May 19, 1896, in which, after having much to say of local causes, he says, "Just what effect upon the stomach is produced by the constant swallowing of bacteria and pus from diseased teeth, mingled with decomposing particles of food, we are unable to determine, but it is reasonable to suppose that gastric disturbances are greatly aggravated, if not induced, by so doing.

"Any acute or chronic affection of the stomach, alimentary tract, liver, kidneys, or skin is almost certain to result in more or less marked change of the breath, from the fact that the waste that fails to be removed by the defective organ is thrown into the lungs, and will, in many instances, produce a disagreeable fetor of the breath. Especially does any defect in the functions of the digestive apparatus almost invariably manifest itself as a source of this disorder.

"Finally, it may be stated as a general proposition that any morbid condition of the system which prevents the elimination of metamorphosed nitrogenized material, or retards the passage of decomposing waste matter through the intestines, will produce a fetid breath."

In a search which I caused to be made of periodical medical literature for references to this possible tainting of the breath there were found, one by "Cathell" in Md. Med. Journal, 1895, Vol. 33, p. 276, and the second by Lederer in Med. Rec. 1908, Vol. 1, p. 58. Cathell expressly speaks of "vicarious elimination" by the lungs and Lederer says "to prevent proper elimination of waste material through the ordinary channels will produce a change in the character of the gases in the blood entering the lungs and a contamination of these gases will give them a fetid odor."

Dr. William Hunter, in his much reprinted and discussed article, "The Role of Sepsis and Antisepsis in Medicine," originally published in *The Lancet,* London, England, January 14, 1911, says, "Staphylococcal and streptococcal organisms were always in the body, e. g., the intestinal canal." He also speaks of the time "when a knowledge of the principles and practice of antiseptic medicine will be deemed as essential and necessary to the physician as a knowledge of the principles and practice of antiseptic surgery is now essential to the surgeon."

Incidentally, I feel called on to say that faulty premises and evidences of lack of accurate observation in mouth conditions detract from the value of Dr. Hunter's paper in so far as it becomes an attack on modern dentistry. Granting that there is much excuse for his tirade against crown and bridge work, his setting up of hospital systems of "antiseptic dressings of the mouth" against oral prophylaxis as advocated and practiced by conscientious dentists tends to weaken his arguments with those who are observing the salutary effect of the present oral hygiene crusade.

Medical text books recognize the possibility of a blood taint being taken care of in part by the lungs acting vicariously and yet the breath does not seem to be taken into account as systematically as its diagnostic value would seem to warrant. As this subject of autointoxication is approached by Bouchard, who seems to have originated the term, and Combe and other followers, the profitable field seems to point toward prophylactic use of intestinal antiseptics along with attention to a regimen calculated to keep down the formation of intestinal poisons so that the natural emunctories may take care of the tissue waste.

In addition to "brushing up" my anatomy and physiology by referring to standard textbooks, and consulting Adami for recent studies in pathology, I am indebted to the treatises of Bouchard and Combe for my little confidence in approaching this subject of autointoxication, as it ought to interest the dental practitioner.

AMALGAM.*

BY C. C. CORBETT, D. D. S., EDWARDSVILLE, ILL.

When your committee invited me to write a paper on Amalgam, my first thought was, how much I would prefer to write on some other filling material than that which has been characterized as the "despised stuff." How I could set forth the beauties of a thoroughly condensed, highly polished, cement lined gold filling, or a cast gold inlay with adaptation to cavity margins so perfect as to almost exclude moisture without the aid of cement. Since I am not permitted to dwell on the advantages of some other filling material, I will at once take up the cause of Amalgam.

There has been a great deal said in the last decade on the beauties of the porcelain inlay, and how to insert a perfect gold filling. Now comes the standardizing of the cast gold inlay, but look back over our dental journals for the last ten years and see how many papers have been read on amalgam. From the silence on the subject one would suppose that it had received a complete knockout blow, and no one was using it.

To champion the cause of a most unpopular material, a material that is called the "despised stuff," a material that has long since been considered a poor substitute for poor people, requires a little nerve tonic, but I am not going to change or modify my views for the sake of courting popularity with the profession. There has been enough written on the different filling materials, and the technique of how to handle, insert and finishing fillings, and where the use of these materials are indicated, to have increased the operating efficiency of the profession by one hundred per cent, if its members had studied, and put forth an effort to profit by the teachings of these various writers. It appears to me that the profession has followed more closely the technique as laid down for the more esthetic filling materials than it has that of amalgam, in other words, the operating efficiency of the profession with amalgam at the present time, is at least one hundred per cent behind the more esthetic filling materials.

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*Read before the Chicago Dental Society, February 20, 1912.

In preparing this paper I thought I would find out in a measure how important my subject is, so I addressed two hundred communications to dentists whom I considered of the average and better class of practitioners of the state, with this inquiry, "Having accepted an invitation to write a paper on 'Amalgam,' I thought I would like to find out how important my subject is, and in this endeavor am asking you to be one of two hundred dentists in the state to count all the fillings, including inlays on twenty consecutive pages on which fillings are recorded in your ledger or index cards, and figure the percentage of amalgam fillings and let me know the result. Your name will not be used." Of these two hundred inquiries I sent about eighty to men in Chicago, and about one hundred and twenty to men scattered over the state, nearly all to members of the State Society, so as to feel sure that I had selected a list of men rather above than below the average. Of the Chicago men fifty-two failed to reply to my inquiry, and twenty-eight replies indicated that the percentage of amalgam in their practice ranged from one to seventy per cent, with the average at thirty-nine.

I do not consider that this gives us any definite idea of the percentage of amalgam fillings inserted in Chicago. Some of these men sent me two lists, one selected from their records of former years, and another of recent date, showing a decrease in its use since the advent of the cast inlay, and most of them indicated that their percentage was taken from recent date, which in turn would indicate that the average of thirty-nine per cent is not below the actual per cent of amalgam used in their practice today. I regret that I did not send out a second and larger list of inquiries for Chicago, so as to have reached a more definite conclusion. There may be two hundred men in Chicago whose per cent will run below thirty-nine, while in all probability there are from eight hundred to one thousand whose per cent will run from thirty-nine to seventy and some considerably higher. I arrive at this conclusion from the replies already received, and also the replies received from a large number of our best practitioners scattered over the state, so I believe that it is perfectly safe to estimate that over fifty per cent of all the fillings inserted in the city of Chicago are amalgam.

A few of those who were kind enough to reply to my inquiry expressed their belief that teeth could be preserved better with gold—these replies prompt me to present a few records from my own practice, which I will do a little later,—but more expressed their opinion that amalgam is still a very important filling material.

One man from Chicago whose practice runs sixty per cent gold and forty per cent amalgam writes, "To my mind a good amalgam filling is very serviceable and what would a great majority of the people do without it?" and I would add, what would a great majority of the dentists do without it? This man has a high-class practice and has the courage to speak kindly of a material that carries him safely over the difficult places. "Speak not ill of the bridge that carries you safely over."

Of the one hundred and twenty inquiries sent out over the state I received seventy-three replies, with percentages ranging from thirty to ninety-one, with only five men running below fifty per cent, and three men running even fifty, leaving sixty-five men out of seventy-three whose practice runs over one-half of all their fillings inserted in amalgam. Desiring more evidence on this subject, I selected the county seats of two large counties and one small county, and sent inquiries to all the dentists of these three cities. Most of them counted the fillings on fifty pages, and received their replies as follows: The smallest city averaged sixty and one-half per cent, the next city seventy-eight per cent, and the largest city eighty and one-third per cent. These three county seats averaged seventy-three per cent plus. As indicated by these replies the state outside of Chicago averages sixty-seven and four-tenths per cent, and including Chicago, fifty-nine and one-half per cent. This I have reason to believe is far below the actual per cent, and I do not anticipate that the time will ever come when it will drop below fifty per cent.

Do not these results prove beyond a doubt that the subject under consideration is the most important filling material known to the dental profession?

I think it will be impossible for any rapid change to take place in the percentage, because if the situation was reversed with gold taking the high mark and amalgam the low, it would require eighty thousand dentists to do the work that is now being done by forty thousand.

It will be many years before our colleges turn out sufficient numbers to exceed the demands of the profession under the present conditions, thus it will be observed that there is little prospect of a decrease in the use of amalgam. Let us briefly consider what has been done for it in the past, and what ought to be done for it in the future. It may be true that twenty, thirty, or forty years ago it was a poor substitute for poor people, as alloys manufactured at that time were very poor excuses, and I was unable to find one that would not turn black, shrink, or expand to a deplorable degree. It was not difficult to get a combination of metals filed up to amalgamate with mercury and crystallize in time. Many of them required three, four or five hours to crystallize sufficiently to resist mastication. The technique of amalgam operations at that time was very crude, with no use of the matrix, and poor cavity preparation. Of course a train of bad results followed these conditions, which gave it such an unsavory reputation that its progress has been unduly retarded. Slight progress was made before the 90's such as the introduction of the matrix and the Herbst method. Since that time the main effort has been along the line of producing better alloys, some men having spent a considerable portion of their time for severals years in experimenting, until now we have some alloys that are very nearly perfect, possessing all the qualities and requirements necessary to make an amalgam filling or restoration that would appear perfect to the naked eye.

This material when inserted under proper technique, will make as perfect a filling or restoration as is possible to be made with a cast gold inlay for the twenty posterior teeth, and will rank second to no other material in possibility for the preservation of these teeth. My reason for this position is, that it can be as perfectly inserted in any cavity in these teeth as it is possible to insert a cast inlay, and in the very large number of inaccessible places where it is impossible to insert a cast inlay it is especially indicated. There is no excuse for ever losing a single one of the posterior teeth with amalgam that can be preserved with any other filling material, and the only excuse for using any other material in inconspicuous places is, whether the dentist persuades himself that he believes in yellow instead of grey, and makes his patient believe in yellow instead of grey.

Dr. F. F. Van Woert says, "I feel very confident that amalgam will outlive gold foil for many, many years if it ever passes away. There is no question but that it has been the means of saving thousands upon thousands of teeth, and more important than all it has likewise saved thousands of dentists their reputation. And if it were treated half fair its reputation would be in the front ranks with the best."

I would add as a preservative when cement lining is used, but not as an esthetic filling material. I will here give the technique for a large amalgam restoration, extending from the gum margin, and including a part of the grinding surface. Prepare the cavity along the lines of extension for prevention, giving it somewhat of a retentive form; lay out all the instruments necessary to carry the operation to completion without delay, except polishing which should be done after crystallization. Place on the mixing slab a sufficient amount of cement powder and liquid to make a liberal cement lining for the cavity, then thoroughly amalgamate a sufficient amount of alloy for the operation, using barely enough mercury to make a homogeneous mass. (When a restoration is being made that includes half of a crown or more, it is better to make two mixes of amalgam, then to use some after it has commenced to crystallize.)

Now adjust the patient's head to a convenient position for operating, dry cavity and mix cement to a soft sticky consistency, line cavity and immediately press in a good sized piece of almalgam, forcing it into the retentive form of the cavity, at the same time the amalgam presses out the cement at all the cavity margins. Then using a proximal trimmer, see that all cavity margins are free from cement; now adjust the matrix—the kind the operator can handle to best advantage. I use a hand matrix, a long steel strip, about three-eighths of an inch wide; this is cut narrow at some points so it can be adjusted without injuring the gum on the opposite side of the tooth.

When adjusted it is held in place with the left hand, then a pledget of biblous paper is crowded into the V-shaped space, which acts as an absorbent and a wedge, holding the matrix firmly to the cervical margin of the cavity. We now have the cavity from one-third to one-half full with the matrix in position and the hemorrhage, if there be any, thoroughly checked. Now add a little mercury to the first piece of amalgam to be inserted, so it can be easily packed at the cervical margin; the balance of the cavity is now rapidly filled, thoroughly condensing each piece, and gradually forcing the matrix toward the adjoining tooth as the filling progresses. When filled remove the wedge of biblous paper and hold the filling in place with an instrument while removing the matrix. You now have a perfectly contoured filling. Next trim and carve the grinding surface for occlusion—by this time the filling is beginning to crystallize and is just right for trimming the sides and cervical margin of any shoulder that may exist. This is very important and should be done with knife edge instruments made for this special purpose, such as I have shown you this evening, cutting toward the filling and never cutting toward the enamel, shaving it away by degrees, not trying to cut it all away with one stroke of the knife. When the filling is crystallized put on a high polish. To accomplish this without sacrificing any of the contour at the point of contact, a slight separation is necessary. This obtained, all uneven surfaces are removed with sand paper disks, and linen strips and all edges of the filling are brought down to the enamel margin. This is followed with fine cuttle fish disks until all scratches are removed, and you will have an amalgam inlay that cannot be beaten. "Speak not ill of the bridge that carries you safely over."

The more thoroughly the amalgam is condensed the higher polish it will take, and the better it will retain its color.

Any amalgam filling made from some of our best alloys, and inserted according to the above instructions will never have a ditch around it, as is the case with so many of our cast gold inlays.

Pardon a diversion at this point. I have used soft cement under all fillings including gold for over eighteen years, and it is my firm belief that the practitioner who fails to use cement under his fillings fails to conserve the best interest of his patients. I consider cement lining the greatest advancement in the art preservative. In presenting a few records from my practice, I have selected cases showing the largest number of amalgam fillings, classifying their sizes as follows—every one smaller than one-fourth of a tooth is called a filling, and one the size of one-fourth of a tooth is called one-fourth amalgam restoration and so on, indicating the size by the fraction used. Miss M. became one of my patients twenty-six years ago, age thirteen. I inserted fillings as follows:

1886. Three amalgam fillings and three one-fourth amalgam restorations.
1890. One amalgam filling.
1891. Eight amalgam fillings, one one-fourth amalgam restoration, one gold filling.
1896. One amalgam filling.
1897. One one-fourth amalgam restoration.
1899. Two amalgam fillings.
1900. Two amalgam fillings.
1901. One amalgam filling and refilling one on account of recurrent decay.
1902. One amalgam filling and one one-fourth amalgam restoration.
1903. Two amalgam fillings, one one-half amalgam restoration, one gold filling.
1904. One tooth split, crowned with gold.
1905. Two amalgam fillings, one gold filling.
1906. One amalgam filling, three one-fourth amalgam restorations, refilling one on account of recurrent decay.
1908. One amalgam filling, four silicate cement fillings.
1909. One amalgam filling, one silicate cement.
1910. Three amalgam fillings.
1911 Four amalgam fillings and changed three silicate cement fillings to gold.

This patient never lost a filling and the record shows fifty-one fillings in separate decayed places, forty-three of which are amalgam, and her mouth shows no disfiguration on account of these fillings.

My other record is of a family of eight children, extending over a period of twenty years, showing the insertion of two hundred and thirty amalgam fillings; the loss of no fillings, but the refilling of ten on account of recurrent decay or fracture. On examination I find five small recurrent decays at the present time.

These records show that amalgam does preserve teeth, and in most of these cases the teeth were so sensitive that it would have been almost impossible to have prepared them for inlays, and one is not justified in subjecting his patient to the extra tax or nerve shock necessary for extensive cutting for inlays in inaccessible places. Now let us consider what ought to be done for amalgam, and why?

It has been estimated by some of our writers that the dental profession receives its support from twenty per cent of the people. While I do not agree to these views, it will be conceded that a very large percentage of our people have little or no dentistry done; it will also be conceded that those receiving dental services are largely from the better classes. Then what may be expected in a few years from the effects of this great campaign of oral prophylaxis and school inspection, resulting in the dental education of the masses.

The result will be a call from the working classes for a vast amount of dental services. A class of people that cannot afford to pay for the esthetic part of dentistry, but will ask to have their health preserved, by the preservation of their teeth, and they have a right to expect that some provision will be made for them to receive dental services at prices which they can afford to pay.

Thus it will be seen that in the future there will be just as great a demand for amalgam as there has been in the past.

In view of these facts, every practitioner in this broad land should be imbued with the importance of this part of his practice, he should study the technique of these operations until he comes near reaching the standard of perfection. When this has been done, it will be difficult for the mind to comprehend the vast amount of good that will result. Thus giving the poorer classes an opportunity for preserving their health and teeth with just as positive results, as the rich people receive from the more esthetic filling material.

"Speak not ill of the bridge that carries you safely over" the difficult places, even though it is constructed of a baser material.

GOLD FILLINGS.*

BY FRED W. GETHRO, D. D. S., CHICAGO, ILL.

In attempting to treat the subject assigned to me within the limited time possible to devote to it tonight, it is obvious that I can only deal in general statements, for details are quite impossible. I am assuming that the majority of the audience would like to hear and really expect to hear definite comparisons made as to the relative merits of gold foil, amalgam and the gold inlay as filling materials. Perhaps some of the audience expect this to be a spirited three-cornered affair, each man claiming all for the material he is defending and condemning all others. While I know nothing of what the other essayists are to present, I do not believe that either one will make such statements, and I assure you that I can make no such claims.

It is practically impossible to make a definite comparison unless we compare the various materials in a given case. I believe that every thoughtful dentist will admit that all of the materials referred to have their place in the practice of dentistry. In fact, my opinion is that any dentist who uses any one of these materials to the exclusion of the others, or who does not make use of all three of the materials, is not doing the best for his patients. There is no best material except for a given case.

For instance, some of us practice among a class of people who care for their teeth only when something is wrong. In other words, the operator does not find cavities in their beginnings, but after they are very large. Such cavities and conditions could not be compared to the practice of another dentist whose patients come regularly at stated intervals and where the operator finds the cavities in their beginnings or where they are comparatively small. In the former, gold foil fillings would be contra-indicated. In fact, it would be impossible to properly place foil fillings in most of these cases. In the latter case, where the dentist finds these cavities in their beginnings, or where they are of the typical size, gold foil is by far the best filling material.

I would not be understood as making weak claims for foil gold, for I know the great value of gold foil as a preserver of teeth. I want it understood that I am not decrying other methods or other materials used for filling teeth, but I desire to place the credit for the advanced position of dentistry where it belongs, and I most certainly give that credit to gold foil. We, of course, concede that the other element, just as essential, was the skill of our predecessors during the past half century or more. When we see the many foil fillings that have been in the mouths of our patients 30, 40, 50 and even 60 years, in practically perfect condition, we realize what a debt we owe to those skillful operators.

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*Read before the Chicago Dental Society, February 20, 1912.

I would make the unqualified claim that gold foil fillings possess the greatest number of what might be termed the cardinal virtues of a filling material. This material is capable of being placed so that it has a most important property that no other filling material possesses, namely, the property of being adapted to the walls of cavities so as to take advantage of the elasticity of the dentin. This elasticity of the dentin is a property which I do not believe is taken advantage of by the average operator. Expressed differently, I question whether the average operator so places his gold foil, building it under definite rules, having in mind the stepping of the plugger point and the direction of force, etc., finishing each condensation against each wall, thus taking the advantage of this elasticity of the dentin. While this knowledge of gold building is exacting, the rules have been so definitely expressed, that I believe it possible for every dentist to master them.

It is summed up in the expression adaptation to walls. A filling may be malleted very thoroughly and be free from pits and have a high specific gravity, but may be a failure because adaptation to the walls had not been sufficiently forceful. Gold does not spread under mallet force in such a manner as to cause the dentin to grasp it unless the operator applies the principles of gold building, plus the exacting technic. A gold filling properly placed hermetically seals the cavity.

The point that I would make here is that a foil filling placed in a tooth in the manner that I have in mind makes a filling that is larger than the original cavity. This can be easily demonstrated. I have here two practically square pieces of ivory that were made as accurately as the finest instrument maker could mill them. Brass plates were placed around these pieces of ivory and while they were held firmly together, holes were drilled through the brass plates and blocks so that bolts and nuts would maintain their correct relation. A cavity, consisting simply of parallel walls was made so that the junction of the two square blocks would be the center of the cavity. When gold is condensed in this cavity between these walls and thorough adaptation is secured, we have a gold filling that is larger than the prepared cavity by virtue of the condensing of the walls of ivory, the elasticity of which is forever grasping the filling. These cavities are not deep and there is no retention except what is gained by building the filling between the parallel walls. In making these fillings, I held a small threaded screw in the cavity while condensing the gold, building around it until it was firmly imbedded in the filling. After completing the filling, which is only two millimeters deep, it will be found that it is exceedingly difficult to displace. If we open the ivory blocks and remove the filling and then close the blocks by means of the bolts and nuts, exactly as they were when we placed the filling, we will find that it is impossible to replace the filling. The only way to return this filling to its original position is to loosen the nuts and replace the filling as accurately as possible, tighten the nuts and bolts again having the walls grasp the filling. I have not made any definite tests to show just how many pounds pressure would be required to displace certain fillings, but I am satisfied that the results would be surprising.

No other material has been tried long enough, nor have we kept accurate records a sufficient length of time, to show just how much they are to be depended upon. I know that some will claim that certain inlays or amalgam fillings or some other fillings have been doing good service for a number of years, but records of scattering cases prove nothing. I can show you an authentic record of a case in the mouth of one of our own members in which a filling came out of a back tooth forty years ago and the cavity has remained open all the intervening time without the slightest progress of decay. This does not prove that this would be the experience in other cases. It only proved that the individual was immune to dental caries. By the same analogy almost any sort of filling material that could have been used in that cavity might be credited with saving that tooth.

In keeping accurate records or making satisfactory deductions, we must not lose sight of the conditions. The age of the patient, the habits of the patient, the immunity or susceptibility to decay and many other conditions, must be taken into consideration, if we are to arrive at correct deductions. It is reasonable to assume that most of the inlays of which we have records, have been made in the mouths of adults, many of them immune to dental caries. What we need is a great number of accurate records, showing the results of inlays, and amalgam fillings, taking into consideration the conditions just cited.

If I had the time, I would like to go into some detail of the conditions and cavities where I would place foil fillings and where I would not place foil fillings. It has been quite common to hear men say that they place gold foil or inlays or amalgam where they are indicated. The "where indicated" conveys very little to assist an operator.

After the several papers are read and the general discussion is finished, I have an idea that some of the members, especially the younger men, will be more confused than ever as to the proper material to use in a given case. For this reason, I desire to make my remarks as plain as possible and notwithstanding the lack of time, I want to make a few brief statements indicating with some exactness the form and size of some cavities and just what material I would advise.

I will pass by the pit and fissure cavities by stating that under normal conditions, I would unquestionably advise filling all such with foil for I know that if these fillings are properly made they are permanent. There is certainly little excuse for failure in this class of fillings. Practically the same statements apply to all occlusal cavities, which are developed from pit or fissures, with the exception of those which are so large that one or more of the surrounding walls have been weakened by extensive decay. When this condition obtains, gold foil is not the best material.

When we come to the typical proximo-occlusal cavities in bicuspids and molars, I should again advise the use of foil, for I do not believe any other material will be as permanent. Should these cavities be extensive enough to make one or both walls weakened or some other conditions exist which would prevent the successful building of gold foil, I would of course advise against the foil filling.

When we find large mesio-disto-occlusal cavities in upper bicuspids, I consider it poor judgment to attempt to build with gold foil. If the pulp has been involved, it is just that much worse and either the operator must build his gold without adaptation to the walls or else he will fracture or break the buccal or lingual half of the tooth.

In these bicuspids just referred to, the gold inlay in my judgment, is the only filling that successfully meets the requirements. Whatever material is used, it is well to remember that the buccal and lingual walls should be cut away so that the occlusal stress comes on the filling material and not on the cusps of the tooth.

In making the following statements, I am not decrying the use of amalgam or the inlay as a filling, but rather attacking the methods of operating without the use of the rubber dam. In most of these cases where the operator is not using the dam, he is being deceived in several places. I will only mention two of them. The first essential in the final preparation of cavities is to have the field dry. In the preparation of a proximo-occlusal cavity without the rubber dam, an operator is very likely to fail to appreciate how far decay has spread gingivally on the mesial or distal surfaces. I feel very sure that if the men who make a practice of preparing and finishing cavities in this manner would apply the rubber dam and thoroughly dry the parts in question, they would in many cases be surprised to discover the whitened areas of enamel, due to the beginnings of decay, especially to the gingival, that should have been included in the cavity preparation. No cavity filled with a wet wall can be perfectly sealed.

The next place to which I would call your attention is the dento-enamel junction. No dentist who knows the pathology of dental caries can ignore this most important detail. We all know that when decay reaches the dentin, that it spreads laterally following the dento-enamel junction. Here again most operators who do not use the dam will be deceived and not remove all the decay.

If we should again apply the dam after these fillings have been placed and finally polished, and go over the margins with a sharp-pointed explorer in the same way that we examine the margins of a gold filling, we will frequently be surprised to find imperfect margins that appeared perfect before the dam was placed.

I would warn the younger men that the history of the dental profession shows a succession of fads and that it is not safe for him to follow these processions. I would advise him to investigate for himself and be very careful about accepting the new things that are continually being thrust upon us with extravagant claims.

Only a few years ago the porcelain inlay fad was here and the wrecks that followed that wave are still fresh in our memories. At one of our large clinics held in Chicago during this craze, practically every clinician was to give or wanted to give a porcelain inlay clinic. The pendulum has swung the other way now and too few men are using their electric furnaces. That porcelain inlays have their place in dentistry there can be no question, but they cannot be used indiscriminately—they have their limitations. Only a few years prior to the porcelain wave was the cataphoresis craze. The profession went wild over this wonderful method of desensitizing teeth. This continued for several years and all at once it exploded and the manufacturers were left high and dry with a world of cataphoric machines for the scrap heap.

The plea that I am making is for greater attention to details. The great chasm that exists between our skillful operators and our poor operators is largely due to lack of attention to details. I do not make the claim that it is easy to place foil fillings, but on the contrary, I know that it demands a thorough knowledge of the laws of physics, plus a very exacting technic. I admit that in many cases the foil filling requires an amount of nervous energy out of all proportion to the other methods of filling, but the results are so superior that in most cases we should not consider the substitution of another material. Operators who are under the strain of placing foil fillings should not put in as many hours as a practitioner who is placing other materials requiring much less energy. Stated differently, the operator placing foil fillings (and it must be understood that he is placing them where they should be placed) is doing a much better service and his compensation should be in proportion to the skill and energy required. Surgeons who are under great nervous strain do not operate from early morning till late in the evening.

What dentists need to place their profession in the elevated position it deserves, as being among the greatest benefactors to humanity, is more enduring operations—fillings that will stand the test of time. Many operators are claiming that their patients are demanding other methods than the foil fillings. While this is true, it is also true that patients come to us because of their confidence in our ability and judgment and if we advise them of the superior lasting qualities of one material over another, the great majority respect and will accept our opinion.

GOLD INLAYS.*

BY E. D. COOLIDGE, D. D. S., CHICAGO, ILL.

In the five years that we have had the Taggart system of casting gold for filling teeth, experiments have been made to test the accuracy of the method and numerous articles have appeared in our journals about the process, but it remains today very little changed from the way it was originally given to us. In reviewing the literature on the subject one is impressed with the accuracy of the entire subject in every detail as given our profession by Dr. Taggart himself and this is sufficient evidence that he thoroughly comprehended the subject before he made it known, and by innumerable experiments had perfected the process so that he may justly call it the scientific casting of gold.

It might be of interest to know about how many cast gold inlays are used in this state in proportion to the number of gold foil fillings. Of course, it would be impossible to find the exact proportion, but a more or less accurate estimate could be made from the following report.

A number of cards were mailed to dentists in the different parts of the city and state asking for information which was thought would be of interest and more or less value in this paper. On the replies received I base the following estimate. Taking into consideration the fact that the gold inlay has only been in use five years and allowing some time for the process to become understood, enough to place it beyond the experimental stage and what might be termed by some as the fad stage, I asked the following questions:

Q. 1—Count all the fillings on 20 consecutive pages of your ledger or index cards on which fillings are recorded and which have been inserted within the last two years, 1910 and 1911, and figure the percentage of gold inlays; also the percentage of gold foil fillings.

Gold inlays ————per cent.
Gold foil ————per cent.

In reply to 175 cards sent out, 100 in the city and 75 in the state, I received 59 from the city and 26 from the state with percentages varying from 100% inlays to 100% foil fillings. The total of the replies from the state gave 48% gold inlays and 52% foil fillings. The total of the 59 replies from the city was 68% gold inlays and 32% foil fillings. Averaging the total percentages gave 58% gold inlays and 42% foil fillings. This seems to me to be a very fair estimate of the standing of the two methods of filling teeth in this locality at the present time. Now if this is true, that in five years time a new process of filling teeth has become so well established as to exceed the old and tried method we must take into serious consideration its indications and the procedure necessary to get the best results and follow closely every detail in the technique of constructing such fillings. Much time has been devoted to the perfecting of the system of casting, the composition of the wax and investment material, but we need more emphasis on the proper cavity preparation and the manipulation of the materials used.

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*Read before the Chicago Dental Society February 20, 1912.

Q. 2—Do you use gold inlays in occlusal cavities in bicuspids and molars? Of 88 replies to this question 76 were yes, 10 no and 2 blanks or 86% who use gold inlays in this class of cavities and 11% who do not. The blanks make up the remaining percent which is not considered.

Q. 3—In proximo-occlusal cavities in bicuspids and molars? The replies were 83 yes, 4 no and 1 blank, or 94%, who use gold inlays in proximo-occlusal cavities and 5% who do not.

Q. 4.—In M. O. D. cavities in bicuspids and molar? There were 79 yes, 4 no and 5 blank, or 90% who make M. O. D. gold inlays and 5% who do not.

Q. 5—In buccal cavities in bicuspids and molars? In questions 5, 6, 7 and 8 another thing must be taken into consideration which is the use of porcelain. In these figures I have classed those who use porcelain in these cavities as answering no to my questions. The replies were 68 yes, 18 no and 2 blank, or 77% who use gold inlays here and 20% who do not.

Q. 6—In labial cavities in the six anterior teeth? The replies were 32 yes, 49 no and 7 blank or 36% who use gold inlays here and 56% who do not.

Q. 7—In simple proximal cavities in the six anterior teeth? The replies were 20 yes, 65 no and 3 blank, or 23% who use gold inlays here and 73% who do not.

Q. 8—In proximal cavities in the six anterior teeth where one or both angles are involved? The replies were 59 yes, 25 no and 4 blank, or 67% who use gold inlays here and 28% who do not. I am fully aware that the above data are not more than statistics usually are, but they make a basis for an estimate of the use of gold inlays in these various cavities by 88 different operators of the city and state.

Q. 9 and 10—Do you cast inlays with pure gold? If not, what carat do you use? The replies were 49 yes, 32 no and 7 blank, or 56% who cast with pure gold and 36% who do not. Of the replies to Q. 10, 14 use 23 K 46 use 22 K and 2 use 5% platinum with pure gold.

Q. 11—Do you flow solder on the contact point to make contact? This question applied only to those who use pure gold for casting so the percent does not include all the replies. The object of this question was to ascertain how many consider 24 K gold when cast of sufficient strength to withstand the masticatory force and retain a normal contact point without some additional support. Of 49 replies where pure gold is used for casting 35% flow solder on the contact point and 40% do not the other 25% being blank on this question.

Q. 12—Do you find as large a percentage of failures in gold inlays as in foil fillings? The replies were 13 yes, 56 no and 19 blank, or 15% of the replies say there is an equal percentage of failures while 63% say a smaller amount.

Q. 13—To what do you attribute failures in gold inlays? Some of the replies contained two or more answers as causes for failures thus making a larger total than the total number of replies. The replies were 43 cavity preparation as the cause, 33 carelessness, 10 cement, 2 investment and 1 wax. Of all the replies 48% say that the failures of inlays are due to faulty cavity preparation, and 37% say they are due to carelessness. For the latter there is no excuse whatever, but it plainly shows that cavity preparation needs more attention both in our meetings and in our operating rooms.

Q. 14—Are you using gold inlays as extensively in your practice as you were a year ago? The replies were 75 yes, 8 no and 5 blank, or 85% are using equally as many gold inlays as they were a year ago and 9% are not using as many.

INDICATIONS FOR GOLD INLAYS.

The question of the indication for gold inlays is perhaps best answered that a man is justified in using the method of filling teeth by which he is able to get the most successful results. One authority, Dr. G. V. Black whose principles of cavity preparation for inlays as well as for foil fillings are recognized universally, gives the indications for inlays "where foil fillings are contra-indicated on account of injury to the peridental membrane through diseases that renders the malleting required for the condensation of gold unusually painful or positively injurious and in back teeth where there is great loss of tooth substance in which crowns or very large amalgam fillings have formerly been used but in which inlays may be anchored." Dr. J. V. Conzett has given us very conservative indications for the use of gold inlays in his articles in *Items of Interest* beginning in the September issue of 1910. Dr. G. W. Dittmar has also given an excellent list of indications which may be found in the August issue of the DENTAL REVIEW of 1908. He says in part: "A majority of all cavities found in bicuspids and molars can best be filled with well made cast gold inlays. Gold inlays are also indicated in incisors and cuspids where for good reasons porcelain will not stand and large gold foil restorations are contra-indicated. * * * In cases where it is extremely difficult and painful to place a moisture tight dam to protect cavities which extend far beyond the gingival line and should be filled with gold, gold inlays are indicated. For opening bites or restoring badly abraded teeth, gold inlays are indicated and in many cases they form the most esthetic, the most sanitary and strongest possible anchorage for bridge work. Gold inlays are indicated in thousands of teeth that are now being crowned or filled with unsightly amalgam or temporary cements." Now on the other hand I would add that where the foil filling can be inserted in less time than required to make a gold inlay and with no greater taxing of the patient's endurance providing there is no pathologic condition of the pericemental membrane to contend with, the gold inlay is not indicated. In the 88 replies to the questions sent out there were 3 reporting no gold inlays and 7 reporting no foil fillings. There were 21 or about one-fourth which reported over 90% gold inlays. However, of the total reports the average was 58% gold inlays and 42% gold foil.

CAVITY PREPARATION.

Practically the same principles of cavity preparation apply to inlay work as to foil fillings. The outline form should be the same as for foil gold only keeping in mind the necessity of sufficient extension for the removal of the wax pattern and access to all parts of the cavity. The cavity must be prepared with the same reference to the resistance of stress. Fillings on the mesio-occlusal surfaces of upper bicuspids and molars receive more stress than those on the disto-occlusal surfaces; as the lower teeth come into occlusion with the upper teeth the force is applied in a mesial direction having a tendency to unseat the filling on the mesial surface and drive the filling on the distal surface closer to the cavity wall. The direction of force in the lower arch is opposite to the upper with a tendency to dislodge disto-occlusal fillings and retain mesio-occlusal fillings. There is another force to be considered, namely, the wedging force of the lower buccal cusps as they strike between the buccal and lingual cusps of the upper teeth. This force is not so fatal to the filling as to the weakened and unsupported cusps and will cause a failure of the filling unless given due consideration and guarded against.

There are three forms of retention for inlays. Mechanical retention or locking the inlay in place by a dovetail joint, friction against the cavity walls and cement. In a great many cases too much is expected of the cement and not enough attention paid to the kind of retention that would prevent a failure of the inlay. After establishing the outline form of the cavity it must be made free from all undercuts. The seat of the cavity should be made broad and flat with a flat axial wall at right angles. In proximo-occlusal cavities there should be a step making a right angle with the axial wall. In the occlusal surface of the cavity the pulpal wall should be flat and widened in a bucco-lingual direction at its extremity to make a dove-tail joint to prevent the filling from being crowded away from the tooth when force is brought to bear upon it. The buccal and lingual walls should make an angle with the gingival and axial walls nearly equal to a right angle making them nearly parallel, just diverging enough to allow the wax pattern to be removed. All walls should be cut away until strong, healthy tooth structure is reached even cutting away an entire cusp when necessary. In cases where the tooth is badly broken down the use of posts is often indicated. If the pulp is in the tooth pins of irrido-platinum or clasp wire 20 gauge may be extended into the dentin from one to two millimeters in depth, care being used not to strike the pulp or endanger its life by their proximity. In devitalized teeth, especially in bicuspids, and the six anterior teeth a post of good size may be used to extend into the canal; but the retention of the filling should never entirely depend upon such a post.

The convenience form of the cavity should never be overlooked as it is of great importance. There must be sufficient extension of all cavities to afford easy access in order to manipulate the wax or impression material in every part of the cavity. Many failures in inlay work are due to a lack of consideration of this detail. I believe it is better to sacrifice a little tooth structure for the sake of making it possible to perfectly fill the cavity than to save it and lose both the filling and tooth structure by decay in a short time.

The final detail in the preparation of the cavity is the beveling of the margin of the cavity or the cave-surface angle. This should be in about the same proportion as for a foil filling on all surfaces of the tooth.

There are two methods of procedure after the cavity is ready. One by making a wax pattern directly in the cavity and the other by taking an impression of the cavity in modeling compound and making a die of amalgam in which the wax pattern for the inlay is made. There are advantages in both methods and sometimes one can be used more successfully than the other. The wax should be of sufficient hardness to break rather than to bend when chilled and yet soft enough to be moldable when warmed. Waxes of different degrees of hardness can be used to advantage in certain cases. In a deep proximo-occlusal cavity in a bicuspid or molar it is difficult to get the wax to place at the first pressure. This being a hard wax a softer wax can be added to the part by drying the surface and flowing it on where needed. The wax of harder consistency will act as a plunger to press the other to place and aid greatly in difficult cases. The experiments with waxes by Weston A. Price of Cleveland reported in the *Dental Cosmos* of March, 1911, are interesting and valuable and no doubt some of our disappointments after casting can be accounted for. He took two bars of wax and heated them to working temperature. One bar he compressed and the other he stretched so as to change their lengths and then, after chilling, he cut them into equal lengths. After allowing them to stand until warmed to the temperature of the room, he found a difference in their length which he attributed to the elasticity of the wax and a tendency of it to relax when warmed a second time. The one which was stretched had shortened and the one which was compressed had lengthened so as to make a very noticeable difference in their lengths although of equal length when chilled. At least this impresses upon us the importance of keeping the wax pattern chilled and investing in a material at a temperature cold enough not to allow any warping of our pattern.

The wax pattern should be invested as soon as taken from the cavity and as soon as the investment is hard it should be heated enough to melt out the wax and dry the investment but no more heat should be applied. Dr. Taggart has given us rules to follow with the manipulation of wax and investment which will give the most accurate results if strictly adhered to and the experiments of other men about the country only verify the truth of his statements, and raise our respect for him. Fifteen minutes is sufficient time to thoroughly burn out the wax and then the mould should be allowed to cool to room temperature at which time the cast should be made. Dr. C. R. Baker of Davenport, Ia., made some interesting experiments with casts made in hot and cold molds, which are reported in the Dental Review of February, 1910. He found that casts made in cold molds were of greater specific gravity and that there was less variation in the size of the casts made in cold molds.

The cast should be made of pure gold in all cases where the stress of mastication will not batter the inlay too much to allow it to fulfill the requirements. In Dr. G. V. Black's Operative Dentistry, Vol. II., Page 233, is a report of some experiments made to show the relative hardness of cast, hammered and annealed gold and the percent of shortening under a stress of 300 lbs. on one-tenth inch cubes.

Specific Gravity—Percentage of shortening under stress of 300 lbs.

	Specific Gravity.	Greatest.	Average.	Least
Cast	19.22-19.25	12.16	10.14	8.30
Hammered	19.3	2.52	2.09	1.35
Annealed	19.3	14.41	13.14	12.70

Although casting with pressure generally gives a greater specific gravity than shown in this report we cannot get away from the fact that the gold is annealed and is in its softest state and will not stand up under heavy mastication and retain its shape and contour. Still pure gold casts better than that of a lower carat and may be used in many of the smaller restorations. It can be supported on the proximal surface to a more or less extent by sweating some 22 K solder across this surface and at the contact point. Casts made of 22 K plate will usually answer the requirements of those fillings where a considerable amount of stress is brought to bear upon them in large contoured restorations. In some cases pure gold, with from five to twenty-five percent platium, has been used successfully.

The inlay should be polished before setting except along the margins which should be burnished and polished after setting to thoroughly seal the tooth. This saves the patient much disagreeable finishing in the mouth. A majority of the failures of gold inlays occur at the gingival margin or are due to a failure of the inlay to remain in place. The latter is due in almost every case to faulty cavity preparation. The former is generally due to carelessness and there is no need for this with proper attention to every detail in the technic of the work. We should first have in mind the rules for extension for prevention, and for convenience; second, bevel the cavo-surface angle; third, get a perfect impression of the gingival margin of the cavity; fourth, keep the wax chilled while investing; fifth, only apply enough heat to burn out the wax and dry the investment, the total time required being only fifteen minutes; sixth, cast in a cold mold. If we attend every detail of gold inlay work with as much pains as is necessary to make a perfect foil filling we will have a filling that is just as perfect and one that has many arguments in its favor to prove its superiority.

PUBLIC SCHOOL INSPECTION.*

BY DR. JAMES STEWART, SUPERVISOR DEPARTMENT OF HYGIENE, ST. LOUIS, MO.

I will try to show you what can be done in the matter of hygiene of the mouth with dental services. We have no dental department, but we feel that a dentist is not needed. We feel that the doctor in making his inspections can tell whether there is any need for dental services. About 16 years ago, the City Hospital Alumni Association took up this matter and presented reasons why there should be created a department of school inspection. They continued to present it for a period of ten years until, finally there was established a school for individual instruction for backward children. About four years ago the first medical officer was appointed, and continued for about 18 months when five assistants were appointed. They did not feel that they should appoint more than five at that time, because the department was an experiment. The first year they took care of 15,000 children in about 19 schools. When we took up the work next year, we added a corps of five nurses. People interested in this work always thought that a great many physical defects existed among the children, retarding their progress in school. We found that nose and throat defects, dental caries, and of course, contagious diseases prevailed. When a contagious disease was found, the child was kept out of school for a period of a few weeks, returning practically normal and making up for his lost time. But in the cases of defective children they were often neglected and it was in many cases the cause of death, and if not death, the defect was with the child all the time, retarding it, so that it was up to the board of education to get results, and some follow-up system was necessary with these indigent children. We would advise the parents of these physically defective children that they should consult their family physician relative to the defect. When they did not respond, the nurses would visit the home. We met with very little opposition. Some doctors felt that we were trespassing on their rights, but we were advising the parents to call their family physician or dentist, and if they had none and were not able to pay for service, then we would simply advise them to go to the nearest clinic. The expense was a serious obstacle in many cases, as the matter of a few pennies would look like a matter of dollars to some of them. Mr. Blewett recommended to the board of education that they pay the car fare of these indigent children to the medical or dental clinics. Last spring through your dental society and your committee, we got in touch with the large Universities, and they very kindly consented to take care of ten children at Washington University on Monday, Barnes University on Friday, and St. Louis University on Wednesday. We have a good report of that work, but it was but a drop in the bucket as it were, and we feel that through these dental departments and the dental profession, there is a great opportunity for these departments for doing great work.

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*Read before the St. Louis Dental Society November 7, 1911.

I will try to show you just how this is conducted, so that you will understand our system. The thickly populated part of the city was divided into five districts; bounded north by Cass Ave., south by Dorcas, and Jefferson Ave. We find it takes a great deal of time in going from one school to another, and much time lost.

We have rules governing this work, some of which I will read:

Rule VIII, Section XVI: There shall be a division of the department of instruction, designated as the department of school hygiene. Section XVII: The work of this department shall be:

a. To examine all of the pupils at least once a year for the purpose of ascertaining the existence of any physical defect that interferes with the pupil's progress in the school, and to report any such defect to the parents, and advise that the family physician or dentist be consulted.

b. To examine daily all evidences of the presence in the schools of communicable diseases and to make prompt report of all cases of such to the board of health or its officers.

c. To examine the sanitary conditions of the school premises and to make report of it to the superintendent of instruction.

Section XVIII: The superintendent of instruction shall have power to appoint for this work: supervisor of hygiene and as many inspectors of hygiene as the board may from time to time determine.

The supervisor and inspectors shall be graduates of medical colleges of recognized standing.

Section XIX: The supervisor of hygiene shall be a skilled physician and shall have general supervision of the work of the department and such other duties connected with it as may be assigned to him by the superintendent of instruction. He shall devote his entire time to the work of the department.

Section XX: The inspectors of hygiene shall devote themselves to this work for ten months in each year, and shall during all school hours be engaged in their investigations in the school buildings; and during the school term shall use such further time as shall be required for making the necessary examinations and reports.

No one shall be nominated for or appointed to the position of inspector of hygiene who has not passed successfully an examination offered by the board of education to all candidates for such position. This examination shall be given both as a test of professional training and experience as a physician, and of personal qualifications for this special work.

Section XXI: The supervisor and inspectors shall be elected for a term of one year by the board of education upon nomination of the superintendent of instruction. Their schedule of salaries shall be so fixed as to include the necessary expenses for car fare or livery, for which no extra allowance shall be made.

Section XXII: The supervisor and inspectors shall not treat any case of physical defect or disease that has been discovered by either of them while engaged in the work of this department.

Of course when cases under your observation are emergency cases, it is your duty to take care of it. We had an occurrence like this a few days ago. A case was reported to me late Saturday suffering from tetanus, saying it was from vaccination. I inquired into the case, and the child was suffering very severe pain in the jaw, also was told the child was able to be about. I went over to see the child immediately Sunday morning. Instead of the child having tetanus, it was suffering from an abscessed tooth, and the mother was treating it with turpentine and lard, yet it had been first reported as tetanus.

Section XXIV: The work of the department shall be conducted under such further regulations as may be prescribed by the superintendent of instruction with the approval of the board of education.

REGULATIONS.

1. At the beginning of each quarter a program of the usual order in which the daily visits are made shall be filed by the inspectors in the superintendent's office.

2. The inspector shall visit each of the schools in his district, every morning, beginning with the first school at nine o'clock. We find that is not as practical as was at first thought, as we have five or six schools each day, and we can't get to some of them until late in the afternoon.

4. After the above inspections have been made in all of the schools under his care, the inspector shall make a physical examination of the children designated by the principal to ascertain if there is any abnormality which is a hindrance to the child's progress in school, and notify the parent or guardian, in case a defect is found to exist, recommending that the child be taken to the family physician or dentist for advice and treatment. This recommendation is to be made on the regular blank provided for that purpose. If a child is excluded, brief but sufficient reason therefor must be written on the notices sent to the parent and health department and on the card filed with the supervisor.

5. In making inspections care must be used not to disturb or excite the child and school as little as possible, and throat cultures are to be made only when good reason therefor exists.

6. In making throat examinations, the wooden tongue depressor must be used, to the exclusion of all other tongue depressors. Each tongue depressor must be used only once and then burned. Asceptic methods must be employed in all examinations.

7. Vaccination should be done by the family physician or by the physician of the board of health.

8. Inspectors must not recommend any physician, specialist, dentist, clinic, or make any suggestion as to the treatment or management of pupils who are in need of it.

A few years ago I had a case in one of the schools of the South Side, a suppurating ear trouble. I immediately excluded the child from school, for as long as we do not do this way, we do not get results. The thing to do is to send the child home, and then the parents will take care of it in order to get it back to school, merely because they will shift the responsibility of their children to other people. The mother asked me, "Why do you not allow my child to go to school?" I said that she would have to have him treated, and she said that she had done so, and when asked by whom, she replied at Lewright & Whitener's Sanitarium on North Grand Avenue. She asked me whom I would recommend. This, of course, was against our rules, but the case being peculiar, as she did not really know of a competent physician, I took some cards and wrote the names of some ear specialists, then shuffled them, and said, "Now pick one of them." She did so and took her child to this man, and inside of thirty days the child was again in a normal condition. So that will show you how particular we are in not making any special recommendations.

9. The inspectors shall observe the sanitary and hygienic condition of the school buildings and the premises, reporting in writing their observations to the supervisor. This inspection shall include the lighting and the position of the desks with reference thereto, and the ventilation of the building.

10. The principal will refer to the inspector any pupils in school who seem to be suffering from infectious or contagious diseases.

For this purpose he should have all children to be examined, sent to a properly retired room or place when the inspector comes for examination.

The finding of a case of tuberculosis in a school child is a very serious matter. We do not like to say to the mother, your child is suffering with tuberculosis, and we do not say so until we have verified it in several different ways.

13. Contagious and infectious diseases. (a.) Examinations are to be made for the following diesases: Scarlet fever, diphtheria, measles, rotheln, smallpox, chickenpox, tonsilitis, pediculosis, ringworms, tuberculosis, impetigo contagiosa, or other transmissible diseases of the skin, scalp and eye. Tuberculosis, when thought to be far enough advanced to be a menace to the pupil's health, must be reported to the supervisor of hygiene before excluding the pupil from school.

(b.) Scarlet fever cases must not be allowed to return to school until desquamation is completed, and there is an entire absence of discharge from ears, nose, throat or suppurating glands and the premises are disinfected by the board of health. This requires six weeks—severe cases eight weeks or longer.

(c.) Diphtheria cases must be excluded until two throat cultures made upon two consecutive days show absence of the Klebs-Loeffler bacilli. Those exposed directly should be excluded for one week from last exposure.

Two years ago we had 15 positive reports of diphtheria cases, and five or six showed no bacteria whatever. We reported to the health department. The family physician was called and found the child was not ill, and when asked if he had made a microscopic examination, he kept quiet. Those cases are very troublesome, but we are backed up by the health department, and we are justified in excluding these cases, and we simply ask for the removal of the infectious person.

(d.) Measles cases are very infectious in the early stages, and must be excluded at least two weeks and longer if there is present bronchitis, inflammation of the throat, nose, or abscess of the ear. Those exposed to measles should be excluded two weeks from date of last exposure.

In measles cases we allow them to remain in the house, not getting in contact with the patient, and they are permitted to go to school, if they are under daily inspection by the inspectors or the family physician, and daily reports are made to the health department of the inspection.

(e.) Whooping cough cases should be excluded until after spasmodic stage of cough, usually about three weeks.

(f.) Mumps: Exclude ten days after swelling has subsided.

(g.) Chickenpox: Exclude until scabs are all off and skin smooth—two or three weeks according to the severity of the attack.

In Chicago when a case is reported, that case is immediately seen by one of the health inspectors. The matter of quarantine is a matter for the district officers. If the case comes to a practicing physician, he simply reports it and that ends it, as far as he is concerned about the quarantine. The matter of quarantine here is simply a farce. They will keep the child out of school, and let them go to nickelodeons, churches and other places of amusement. In Chicago they have police assistance, and if they do not obey the ordinance, a policeman is stationed at the front of the house and another at the rear of the house, and if they do not respect this, the child is removed to the contagious hospital. We have inaugurated this system here. If we find a case of scarlet fever in the school, we notify the health department, and they visit the school at night and fumigate the building, and in that way we do not break up the regular conditions, and it works very nicely.

We find that fully 90% of the children of St. Louis are in need of dental service. We find that 45% are suffering from physical defects, which deters their school work. From the statistical report for the last year, we find 5,630 non-communicable diseases in 16,788 children. Out of this same number, we found 2,031 communicable diseases. And out of this same number we found 5,480 children normal.

From the children suffering from physical defects, we found that 1,880 received treatment from their family physician or dentist, and 944 children were treated at the clinics, which would mean that 5,861 children received no treatment whatever. We did not go into the matter of dental inspection last year because we did not have the St. Louis Dental Society to offer aid, but from the experience of the last few weeks, we have gotten quite a good deal of relief, and we hope the dentists will do all they can to further this work.

The reports from the dental clinics of the Washington, St. Louis and Barnes Universities show the following number of children treated:

Report of dental work performed by Washington Dental School, 29th and Locust, for the indigent public school children:

Total number of children worked for	44
Cleanings	44
Extractions	62
Alloy fillings	72
Cement fillings	10
Gutta percha fillings	6
Treatments	40
Total operations	234

Barnes University at Garrison and Lawton:

Total number of children worked for	28
Fillings	88
Extractions	44
Treatments	12
Cleanings	28
Total operations	72

St. Louis University Dental School at Grand and Caroline:

Total number of children worked for	80
Cleanings	57
Treatments	5
Extractions	89
Fillings	55
Total operations	206

This is a complete report of the three dental schools.

Now this is only for a short period. The nurses take ten children at a time to the clinic. Some of the school authorities objected to having any but skilled dentists to do this work, but I prevailed upon them, and we had competent students under a supervisor do the work. We had some trouble at first from the children taking some friends with them, and the result was the clinic was crowded with children.

Now, I do not believe I have much more to say. We cannot promise you anything more than to furnish you lots of material to work with, and I am sure the work done so far is highly appreciated. I will be glad to answer any questions that may be asked.

Dr. M. C. Marshall:

Are the dental inspections made by physicians or dentists?

Answer:

"By physicians. In Chicago in one school last March there were five different people; there was Dr. Rawlings, head of the medical inspection of schools, Dr. Molt, supervisor of dentistry, and then we had men representing the Tuberculosis Society and the district inspector—five different people in that school responsible to five different heads. Now, we do not feel that that is necessary. We can give to dentists or clinics all the work they want if they will do it.

DR. MARSHALL:

Would the dentist have to give all his material as well as his time?

DR. STEWART:

The dental supply houses have promised a great deal of material. It is time enough to think about that when we come to it. I do not feel that we should devote so much time in getting statistics, but should devise some means of giving relief to these indigent children in need of dental services. It will do no good to get statistics and put them in your pocket, and say "What are you going to do about it." If you will take care of the children sent to you, you will get some statistics.

DR. MARSHALL:

We would all be busy.

DR. RICHARD SUMMA:

Is there any way in which the city authorities could be induced to take this work up in a business way, and pay for a dentist who would devote all his time to it?

DR. STEWART:

I do not feel that I am able to answer that question. I am not here representing the board of education.

DR. SUMMA:

Is there any suggestions of anything that can be done with the municipal authorities?

DR. STEWART:

Not at the present time.

I believe that great good will come from this meeting and the department of hygiene will, I am sure, be at all times ready to support any reasonable proposition at any time.

DIAGNOSIS AND TREATMENT OF CHRONIC ALVEOLAR ABSCESS.*

BY G. W. DITTMAR, D. D. S., CHICAGO.

Agreeing, in the main with what Dr. Black has so tersely, yet comprehensively stated, there remains little for me to say.

That the profession does not take seriously enough, the injury caused by the continual absorption of pus from alveolar abscesses, I believe to be a fact,—also that the lack of knowledge, in both diagnosing and treating some of the more virulent cases of abscesses, often results in serious complications—sometimes so bad as to endanger life.

I call to mind a couple of cases that came under my observation not long since.

Mr. S.——, about 65 years of age, had been suffering with intense headaches, so severe that at times he was almost insane. He was a man of large physique and had enjoyed good health up to within about a year of the time that I saw him. He had consulted several physicians and nerve specialists, whose treatment had done little or no good, as far as effecting a cure was concerned.

He had not been suffering seriously with his teeth. However, on examination, I found his mouth in a very unsanitary condition and three molars with chronic alveolar abscesses—the teeth loose and discharging considerable pus. I advised extraction of the badly broken down diseased teeth, which was immediately done. The result was wonderful, in that he has been entirely relieved of the severe pains in the parietal and occipital regions of the head and is enjoying his usual good health now for over a year.

That auto-intoxication, the result of absorbing toxins from these abscesses, was the cause of disturbed nerve centres there can be little doubt, and that practically every case of abscess, even of the chronic quiet sleeping kind, causes more or less toxemia, I believe to be a fact.

The other case was that of a man about 73 years old,—diabeatic and rather feeble.

Pulp died in lower left first molar, and acute abscess resulted—

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*Discussion of Dr. A. D. Black's paper before the Northern Illinois Dental Society October, 1911.

case improperly diagnosed and improperly treated.

When I saw the case the man was suffering intensely and had a temperature of nearly 103°. Pus had torn and lifted the periosteum from the third molar to the cuspid,—the lip and lower portion of the cheek on the left side were paralyzed. Though I did attempt to save the molar, I soon found that *it* had better be sacrificed than possibly the patient.

The abscess was heroically lanced, the pus washed out and the case packed for drainage. I cannot help saying a word here for bismuth paste, which really proved a most valuable agent and which was used with delightful results later in the treatment of this case. Necroses was quite extensive, but the sequestra were finally shed and the case healed—the lip and cheek after months resumed the sense of feeling.

This patient nearly lost his life, the result of careless diagnosis —an extremely virulent infection and the lack of resistance on the part of the infected tissues.

I wish also to endorse what the essayist says regarding the promiscuous use of "Abscess Cures." That some are good I have no doubt, but the indiscriminate use of "dope," the composition of which you do not know, should be condemned.

Considering the title of the paper, "Diagnosis and Treatment of Chronic Alveolar Abscess," I have this slight criticism to offer—that Dr. Black has almost entirely dealt with the surgical side of the question, and has held up a rather discouraging picture as to effecting a cure in most chronic alveolar abscesses by means of non-surgical measures.

It is my belief that the great majority of chronic alveolar abscesses will yield to medicinal treatment and that some that will not yield to the ordinary medicinal treatment *will yield* to an escharotic, which is very carefully forced through the root canal and out through the sinus—my ideal being pheno-sulphonic acid. I have had gratifying results with this agent where other agents repeatedly failed, and have restored teeth to comfort, usefulness and apparent health where without its use surgical measures would have unquestionably been necessary.

The average patient dreads a surgical operation, and I feel it should be resorted to only when other measures fail, or for obvious reasons it is the only rational treatment.

To treat root canals weeks and months over and over again is all wrong. If in from two to four treatments, from one to three days apart, does not effect a cure of the pus condition, it is practically useless to continue the milder forms of treatment.

The indiscriminate use of powerful escharotics should also be condemned, but I believe there are cases where pheno-sulphonic acid is a boon, if it is properly used.

RECEPTION OF CHILDREN BY THE DENTIST.*

BY DR. W. R. RUSSELL, STOCKTON, ILL.

When first this subject was suggested to me, I thought surely I would be able to find something bearing on it in some of our dental journals. Instead, I find an unusual scarcity of items on this subject, in our journals or standard books. This seems strange to me as we find so much on the care of teeth of the child and are always giving out literature for the parent and trying to educate them in the preservation of their teeth. We all know that even as some adults suffer pain during treatment of the teeth and dental surgery, so do children; again, while an adult may never have had any dental work done, yet they hear from their friend "how it hurts," as they say, yet they can control their will and do that which they know to be for their own good, but with a child it is different. If they know nothing about the extraction of a tooth, whether from hearing others tell of it or from actual experience, their first sitting with a dentist may so frighten them that in many cases their teeth from that time on will be neglected to such an extent that their health will be impaired. And rather than frighten a child as I have known them to be frightened, I should rather lose the case and send them to a dentist who could handle them without frightening them. And this is not altogether the dentist's fault. I would advocate more attention being paid to the reception of children in the course at the dental college. A dentist that does not know how to handle children outside of the office should not attempt to handle them in his office. For this reason a great majority of dentists who are not fathers can not successfully handle the case of any child in his chair. Usually a father can, but I have known some who could not, and

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*Read beforre the Northern Illinois Dental Society October, 1911.

I have known some dentists who were not fathers but were successful in children cases, but they must primarily like children. And children must naturally take to them. Again, especially in the smaller cities and towns, a dentist should make an effort to notice his child patients on the streets as much as and more noticeably than he does his adult patients. I know of no better way to illustrate every point upon this subject than to give you concrete cases that have come under my own observation. While I may not be as learned as some of my hearers, yet it is not egotism on my part when I say that I am unusually successful in handling children. Some time since, a father and his six-year-old daughter came into my office, the little girl being very timid and the father perhaps a little over gruff. Now my aim in handling children, other people for that matter, is to get their mind and attention away from the fact that they have come to a dental office and divert it if possible to something more pleasant and enjoyable. With girls it may be dolls or some other toy. With boys base ball, horses or ponies. With adults according to their occupation and other circumstances. My conversation with the party I have just spoken of was something after the following manner: "Good morning, Mr. Smith; why, hello, who's this, your little girl? How do you do? Did you bring your dolly with you? Well that's too bad. Suppose your papa wouldn't let you. Does your dolly go to sleep? What color are her eyes? Has she got light hair? How big is she?" Such questions as these have a tendency to divert the child's mind from that which she dislikes to things which she did like, and she forgot how she hated to come and her shyness turned to vivacity and she talked readily about her dollies. At first her father had told me that the little one had a tooth that was bothering her and by this time when I sprung the question as to which tooth it was that was so naughty as to hurt her, she opened her mouth and showed unhesitatingly and I soon had her in the chair and by keeping her dolly in her mind I made an examination of the afflicting member and soon had it extracted without frightening her and with much less shock than if I had gone at it rough shod, in which case I doubt if I should be able to get her into the chair again. At another time a child even older had never visited a dentist and was very timid so that she held on to her father's hand and hid behind his back and it was only by the shrewdest tactics that I got a chance to look at her teeth. I found one to extract and three to fill. I prepared and filled one without much pain and got better and better acquainted by leading her out on the subjects I found interested her most, gaining her confidence until it came to the extraction, which was a little more painful and brought the tears to her eyes, but I had gained her confidence during the filling of the first tooth and by comparing to her how little the former had hurt to the latter she lost her timidity and came back for the other two sittings without her father and with no hesitation. With a boy you seldom have to use so much tact. When you do, it requires a different subject and one with which we as men are more conversant. Most of us know what fun it is for a boy to ride or drive a horse; or whether he is going to be an engineer when he grows up, or if he went to the circus that was in town last week. There are innumerable questions vital to a boy, and we can all think of them for we were boys once ourselves. It takes tact in these cases, which some people can not attain. It is more of a natural accomplishment than one which can be gotten by experience to handle children either in or out of the office, and a dentist may consider himself most fortunate if he is naturally and instinctively an adept with children, for if you can get the confidence and later the practice of the younger generation as they grow up, you will be able to hold them as your patients and in many cases their children as well.

PROCEEDINGS OF SOCIETIES.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting of the Odontological Society of Chicago was held on Tuesday evening, December 12, 1911, at 8 p. m., at the office of Dr. L. L. Davis, 81 E. Madison Street, Chicago.

Dr. J. G. Reid, president of the society, occupied the chair.

Dr. W. V. B. Ames presented a paper on "Vicarious Function of the Lungs, as Bearing Upon Fetid Breath."

DISCUSSION.

Dr. George W. Cook:

Bacteria are of three classes, fermentative, putrefactive and pathogenic. Ordinarily we do not find any of the pathogenic germs doing great harm. Any one of these classes performs the same functions, as for instance bacteria that produce fermentation will sometimes produce putrefaction of nitrogenous substances, and the so-called strictly pathogenic organisms are more liable to produce putrefaction than fermentation. The saprophytes, or putrefactive forms are more resistent to the secretions of the stomach. Many of the fermentative germs are disarmed of their power to produce fermentation while passing through the stomach into the intestinal tract, while the putrefactive germs apparently resist that effect. These experiments were made by Adami of Montreal, by tying the various parts of the intestines and determining the effect on the bacteria. He cleaned the animals thoroughly, and fed them various foods containing various well known kinds of bacteria. The fermentative bacteria pass into the small intestines, and their function is seemingly arrested there to a degree, otherwise persons taking a large amount of carbohydrate might become intoxicated from the fermentative process. They might produce a sufficient amount of acids to cause acidosis, and in many other instances they might produce aldehydes. Aldehyde is not the toxic form of alcohol, but they have a particular function of lessening the peristaltic or contractile power of the small intestine to a degree, and sometimes to arrest the digestive process in the small intestine without the individuals getting a sufficient amount of nutriment out of the carbo-hydrate foods that they have taken. The experiment that was made was to the effect that when the ligation was placed at the junction of the small and large intestine very few of the fermentative germs passed through the walls of the small intestine, but after they passed through the walls of the small intestine they were so surrounded with putrefactive germs that their power of action was greatly interfered with. Even when the germs did not pass through the intestinal wall their products passed through, ptomaines, certain forms of putrefactive substances, which were found in the blood and mesentery, showing that the idea conveyed in the paper is pretty nearly an experimental fact, although I do not know that anybody has verified any of this by experiment. It looks so reasonable in connection with work along this line that it would seem to me that the paper is certainly scientific, and requires very deep thought. Adami found when he ligated the large intestine that the Coli bacillus would pass through and be found in the portal circulation within three to five minutes after the ligation where albuminous material had been taken into the large intestine, and if bacteria can pass through it would be most reasonable to suppose that their products would pass through. The so-called ptomaines seem to be very easily taken up by the villi of the mesentery and carried into the circulation. These ptomaines are probably further broken up or changed, and the result of such a process is, of course, that a number of these gaseous substances would necessarily be brought into the general portal circulation, and of course if it got there it would be brought back for distribution again through the lungs and exhaled in the form of gas from the lungs. I think it would be quite impossible anatomically as well as physiologically to say that these gases would be returned from the stomach or intestine directly without entering into the formation of gas in the lungs, and exhaled in that way.

I think, gentlemen, that the subject from the standpoint the essayist has taken, is one of the most important subjects in the whole line of physiology. The dentist has the greatest field for investigation and study in this very line, following the process of digestion from the time the food passes into the mouth until part is thrown off as waste product and the other part used for the return of energy to the body. With regard to alcohol, how much more quickly is the individual intoxicated if he is constipated. If any of you have gotten in close contact with a man who has been drinking all night, and he has not had a good evacuation of the bowels, you can certainly get all the odors you wish, and most of them come from the lungs.

Bodily fatigue is one of the things that always brings about constipation, directly or indirectly, and whenever the peristaltic action of the intestinal tract is lessened, the liability to constipation increases, and of course, in the majority of cases the individual becomes habitually constipated. If there is anything of a poisonous nature which affects the general nervous system, and especially the pneumogastric nerve, the stomach will at once rebel, and throw off its contents in a violent manner.

Dr. Davis:

How do you account for the odor of onions shortly after they are eaten?

Dr. Cook:

There is a possibility of a certain amount of odor coming back, but I think generally it goes into the circulation and back into the lungs, and is eliminated in that way. It may be that some of the odor remains on the mucous membrane of the mouth. I think if you would chew an onion, but not swallow it, you would get the same odor. That is where we have a bad breath that can be taken care of by the proper care of the mouth. The mucous membrane of the mouth is a wonderfully absorbent tissue. You take a watery solution of methylene blue, and rinse your mouth, and if some of the cells were cut out you could see those that have been affected. The same thing is true of the intestines. Professor Hubert, of Ann Arbor, demonstrated that none of the individual fibers pass into the dental tubuli for the simple reason that you could not stain them with methylene blue after injection into the circulation of the dental artery. There are many things that are easily absorbed, and they have a special affinity for a special cell, and this may be true, too, of gases.

I hope that Dr. Ames will continue this work because I think it will elicit a lot of things the so-called prophylactic wave is justified in knowing.

Dr. A. E. Royce:

Mr. President, this subject is one of the most interesting that has been brought to our attention. Almost every one in practice has encountered the different breaths, and we have been able to tell many times what we thought was the matter with the patient, and what corrections should be made in order to improve the breath. Personally, I had years of clinical experience with disagreeable breaths from intestinal indigestion, and have been able to correct them when I found somebody that could diagnose and treat the case successfully. This brings to our attention a chance for diagnosis, perhaps a diagnosis which will assist us in solving the mystery of some early troubles that we have to contend with, and some troubles that are dependent upon systemic conditions. I do not know that I can say anything more on the subject because scientifically I know very little about it. I fully appreciate the obligations we are under to Dr. Ames for calling our attention to this subject.

Dr. L. L. Davis:

I think this subject is one of wonderful interest, but I could not discuss it scientifically. At first glance I cannot but think the premise of the essayist must be right, and that the circulation must take up these gases, because, as we all know, certain persons have peculiar idiosyncracies. Mine seems to run to onions. I cannot eat them without having the odor on my fingers tips three or four days afterwards. It shows that the odor is in the system, and must be carried through the circulation to the periphery of the cells at the extreme end. While I enjoy onions I am obliged to abstain from them on that account.

This subject is one out of the field of the average dentist, and yet we run up against it all the time. I do not believe there is one of us who does not encounter unpleasant breaths, and more especially from those people who live in boarding houses and do not exercise. They come in with beautiful features, but with the odor of the cadaver. That does not come from the teeth, because they are careful with their teeth, and it must come from the exhalations of their lungs. We would be obliged to Dr. Ames if later in the year he would give us a longer paper on this same subject.

Dr. F. E. Roach:

I believe our occupation as dentists is one that should make us all vitally interested in this subject. While I cannot add anything to what has been said that would be of any value, I am interested, and I believe the subject is in the hands of a man that will eventually give us some enlightenment. We all know that Dr. Ames is given to going to the bottom of things. He has been the father of a good many ideas in dentistry, and he shows his versatility by thinking along the lines of physiology rather than mechanics and chemistry. Dr. Ames has been taken by surprise in having to read a paper on such short notice, and I think he will give us later something even more definite. It is a subject of interest to all of us, and one worthy of some investigation.

Dr. J. G. Reid:

I am surprised that dentists have not given this subject more thought. They are up against it every day, and it is surprising that the subject is not more thoroughly investigated.

I think Dr. Ames will recall that this society has had the honor of a paper at a prior time, but how long ago I do not remember. The subject of the paper was, "The Breath," and I think Dr. Gardiner was the author of the paper. The paper was never published, and I do not know what the tenor of it was.

You know that the man affected with pyorrhea has a pyorrhea breath. That is purely local. It is not in the lungs except it be taken up by the system. The stomach takes up the same condition, and it is absorbed in some portion of the alimentary canal. The odor of onions was spoken of tonight. The oil of the onion is a very lasting odor. You may chew a piece of onion a while and spit it out and the oil will be confined on the mucous membrane for hours, and I doubt if you could cleanse the mouth very quickly by any brushing or washing. There is another difference, too. The onion that has been taken into the system does not smell the same as it does coming from the mouth. An onion cooked is not the same as it is in the raw state, and the cooked onion is the odor that prevails after you have eaten a raw onion and it is taken into the system. There is also a peculiar breath that smells like ham. I have noticed it many times. They may be habitual ham eaters. I do not believe that foul breaths come from the mouth, because I have seen too many mouths that have a very bad odor at times. I think you would detect skatol readily. That is a gas that comes from the intestines.

I have noticed in my own case for many years that constipation is the result of fatigue more often than fatigue is the result of constipation. You could often, by a little inquiry, find out the general habits of an individual, and this would bring out some very interesting data.

Dr. Carpenter:

I would like to ask Dr. Reid if he ever noticed a breath that appeared to be strongly sulphurous?

Dr. Reid:

Yes, lots of times.

Dr. Carpenter:

I have, too.

Dr. Ames (closing the discussion):

I am glad that the subject presented so briefly has excited as much interest as it has. There is no doubt but that it is a question which ought to interest the dentist because he comes so intimately in contact with the condition, and there is no reason why he should not help in the investigation of the matter.

I did not go into local conditions to any extent, as my aim was to consider only those taints coming from beyond the lungs. The possibility of the sepsis from pyorrhea or tuberculosis may be very important, passing into the stomach, and intestinal tract to effect the circulation, and thereby the exhalations by the lungs. The tubercular condition of the lungs even I call local as compared to the conditions I have attempted to consider. I was trying to account for the fetors coming from the lungs through the blood. The whole thing resolves itself into auto-infection, it being necessary to recognize the question raised as to whether disease depending on poisons developing in the alimentary canal and absorbed therefrom ought to be called auto-infection, or auto-intoxication. The term auto-intoxication ought properly only to be applied to the results of the retention of the products of metabolism, but a convenient and satisfactory term has not yet been furnished for the other condition, therefore there has been much loose use of the term, auto-intoxication.

There is sufficient evidence that very often the fetor of the breath does come from the condition of the lower intestine. This directly interests the dentist. It should cause him to take care of his own anatomy, and should encourage him to endeavor to have his patients do likewise. If in addition to preventing the development of this putrefactive and fermentative condition a certain regimen may be adopted to keep down this condition, it would certainly be advisable. An interesting study is that of the effect of certain semi-putrefied food, such as some of the cheeses, upon the intestinal tract. I would approve of this society having something to do with intestinal antisepsis as advocated by Bouchard, Combe and others. With reference to onions, I believe Dr. Reid was right when he spoke of the oil of the onion. I believe that this pungent oil, regardless of digestion, gets into the blood. The fact is well recognized that the aromatic oil of the onion can get into the circulation and be exhaled from the lungs from an onion being merely handled by the finger tips.

I hope to find this subject given more attention in dental circles in the future than in the past.

CHICAGO DENTAL SOCIETY.

A regular meeting was held February 20, 1912, with the president, Dr. G. Walter Dittmar, in the chair.

Dr. C. C. Corbett, of Edwardsville, Illinois, read a paper entitled, "The Amalgam Filling."

Dr. Fred W. Gethro read a paper entitled, "The Gold Filling."

Dr. Edward B. Coolidge followed with a paper entitled, "The Gold Inlay."

DISCUSSION.

Dr. C. N. Johnson:

The most vivid impression I have at this moment, after listening to these papers, is the statement made by Dr. Gethro when he said he supposed that if these three papers were read by the average young man in the audience he would not know where he was at.

I have been delighted, however, with the papers, and I think we can get great good from each one of them. I was somewhat surprised when Dr. Corbett got up, supposedly an amalgam enthusiast, and said he had been almost sorry that he had not been requested to read a paper on gold foil or gold inlay, and still he reported statistics to prove that amalgam is used in much larger proportion than gold fillings and gold inlays. I must admit that I did not believe the percentage of amalgam over other fillings was so great as reported by Dr. Corbett. If it is true that fifty per cent—and he claimed that it was a conservative estimate he gave—of the fillings that are being inserted in this country are amalgam fillings, I am astonished and I do not believe, with all credit for the benefit amalgam has been to humanity, that the best work is being done for the people if fifty per cent of the fillings are amalgam fillings. I believe better results can be obtained with other fillings than with amalgam, but not in all cases. Dr. Gethro put the whole question in one sentence when he said, there is no such thing as a "best" filling except for the case in hand. That is the whole situation in a nutshell. Amalgam will do better service in certain cavities than would gold in the same cavities, not because it is a better material intrinsically than gold, but because you may be able to get a more perfect technic with amalgam in a given case than with gold. Nothing is so reliable as a good gold filling that is properly inserted. No other filling is so uniform in its behavior.

I was greatly impressed with Dr. Corbett's paper and with the lesson it brings to the young men as to the necessity for care in the manipulation of amalgam. I would not agree with him in some of his technic, but I believe it is well to uphold the necessity for doing the best work that can be done with the material. Amalgam has done great service for the human race. It is on account of financial considerations that amalgam will still containue to do excellent service in certain cases where people do not feel they are able to pay for the insertion of more expensive material.

Dr. Gethro referred to a point I want to emphasize, and that is the elasticity of the dentin and the fact that a gold filling may be inserted between the walls of dentin so that the filling is larger than the cavity originally was. I think we have sometimes failed to take advantage of the grasping of the two walls of dentin in the retention of the filling, and I think also we probably may have done in other cases an injury to the teeth on account of that very fact, namely, the elasticity of the dentin. We can all recall cases in the early days when we inserted a large gold foil filling in an upper bicuspid, for instance, in which the walls of the cavity were not very strong and in which we found subsequently there was a fracture of the walls. I am wondering in those cases where we were very exact about the condensation and adaptation of our gold foil, if these walls were not fractured, due to the elasticity of the dentin, and to the fact that we made gold foil fillings larger than the cavities themselves. This is a very great benefit in favor of the gold inlay. One will not fracture the cavity walls with a gold inlay so far as exerting elastic force upon the dentin is concerned.

I want to repeat a statement I have frequently made that may seem trite. It may seem almost fanatical today. I want to make the statement that to my mind there has never yet, with all of our enhusiasm for the gold inlay—and I am a gold inlay enthusiast myself—been placed in the human teeth a filling that was so nearly a perfect filling, which will remain permanent so surely as a well inserted gold foil filling. The statement is frequently made that we need a cement lining between the tooth and the metal filling. I want to say that the closer you get gold foil to the cavity walls the better it is. I am not referring to those cases where there is such extensive decay of the teeth that the pulp is nearly involved. None of us would condense gold close to the pulp. We need an intermediate in there. In that connection I do not favor gold foil over soft cement under those conditions. If I place an intermediate over a nearly exposed pulp, I want the cement to set so that I can condense the amalgam or gold foil upon it. I should differ with Dr. Corbett's technic in that regard. If he can do what he says he does, he can get better results than I can. I want something solid to mallet against in gold foil and something firm to compress against when I am inserting amalgam, and I do not want any material that will squeeze out from under and ooze up the sides of the cavity.

Reference has been made tonight to the enormous strain upon the operator and the patient in the insertion of a gold foil filling. There is a man sitting in front of me who has inserted more gold fillings than anyone in the room, I believe, and I want to say to you that he is not broken down yet. Dr. Crouse is a pretty good example of the sturdy practitioner of dentistry. (Applause.) I have seen many of his gold foil fillings, such as I would not care to insert myself today. But I do not fear the nervous tension on myself so much as I do upon the patient. I have no idea that the insertion of gold fillings has killed many dentists. To insert a gold filling the practitioner has got to be intent and thorough in his operation if he would do good work, and the danger with gold inlays is that they give a man the opportunity of being a little careless. That is the greatest disadvantage of the gold inlay.

As to the percentage of failures given by Dr. Coolidge between inlays and gold foil fillings, it would hardly seem to me that it is accurate. I mean by that, it is not fair to take a method that has been used only a few years and compare that with operations which the profession has been performing fifty and sixty years. There are two sides to that question. A man should be an expert in the manipulation of gold inlays, but he has had only a few years to develop this expertness as compared with the manipulation of gold foil. It takes a man longer than that to properly manipulate gold foil. On the other hand, you cannot expect the same number of failures with inlay work that has been inserted so recently as you can with the larger number of gold foil fillings, some of which have been inserted twenty and thirty years. It is not safe to base an estimate on gold foil fillings or gold inlays and make a comparison between the two. The thing is for each practitioner to use that method by which he knows he can get the best results, but he must not be dishonest with himself or to his patients. He must not do a thing because it is the easiest, nor must he use one method when he knows in his heart that there is a method which is much better. If he knows that one method is better than another, it is his duty to gain a mastery of the technic of the better method. If he becomes a master of all methods, he will render the best service to his patients at all times, because he will insert gold inlays, and amalgam fillings, and gold foil fillings where they are indicated.

There was one thing emphasized more particularly by Dr. Coolidge, namely, that nothing in five years' time has ever taken such a hold upon the profession as the gold inlay, and it merits this one thing, that we should give to that method the most careful study we can in mastering the technic. I want to pay tribute to Dr. Taggart, who is not here, that it stands to his glory as a scientific investigator that the method he gave us five years ago was so perfect at that time that from that day to this nothing fundamental has been changed in that process. (Applause.) It is an achievement. It behooves the profession to take up very carefully gold inlay work and study it with the same care that we have given to the study of the insertion of gold foil. When we do that, we will have three excellent methods of saving the teeth, and three are not enough.

Dr. G. E. Hawkins:

These papers are certainly masterful in detail, having been well worked out, and show that the writers have given the subjects considerable attention.

Dr. Corbett said, if I understood him correctly, that amalgam will make as good a filling material in the posterior teeth as any material. I believe we have a material in the cast inlay that in most cases will surpass to a large extent the amalgam filling. In many cases I know it is a difficult matter to shape a cavity that will hold an inlay where we can easily put in an amalgam filling; but you must remember that amalgam will shrink. It is the nature of the material.

Again he spoke about the ditch around most of the cast inlays. When I have a cast inlay with a ditch on it I make up my mind that I have not been as careful as I should. It is not the fault of the machine; it is not the fault of the wax, but I have made the mistake. I have made some mistake in shaping the cavity possibly or in fitting the wax, or possibly have been careless in mixing the investment, for if pure gold is used in casting, the inlay is burnished at the margins to the cavity, you certainly will have no ditches around the inlay.

A point was brought out here that has caused all of us more or less apprehension, namely: just where to use the different materials. These papers have been excellent, but if some one would read a paper or would lay down rules and tell us where to put an amalgam filling, where to put a cast inlay, and where to put a gold foil filling, it would be of inestimable value to the young as well as to the older men of the profession. One of the most difficult things with which I have to contend when I look at a tooth is to tell exactly what should be done for the best interest of my patient. I study it over, I think it over and after I have thought it over and completed the operation, it seems to me if I had done the work differently it would possibly have been better.

Dr. Coolidge spoke about cavity preparation. To my mind it is the secret of success in connection with the use of the cast inlay. I for a long time did not use many cast inlays, but experience has taught me that wherever gold is to be used, except in small cavities, they are superior to the foil filling. I have found that we cannot depend upon cement to hold the inlay. There is one rule that I have followed in my work in making inlays, and that is, to shape my cavity so that it will not be dislodged before cemented to place. If that is done cement will hold the inlay almost every time.

The statistics given by Drs. Corbett and Coolidge are certainly interesting to me. I am glad to know that the cast inlay is being used so extensively, and I think the time will come when it will be used more extensively than it is today. But if I had to go back to the use of gold foil entirely, I should certainly dislike very much to do so, because I believe in the use of the cast inlay. If the details are carefully followed, the cavity is properly prepared, and the wax impression made properly, we will have a filling that will last.

Dr. J. F. Leigh:

Dr. Corbett's paper on amalgam has conveyed an important lesson to all of us. The amalgam filling has its place and has saved more teeth than any other filling, or all other fillings, but, at the same time, I believe the day has come when the amalgam filling will be a thing of the past. I do not believe we can use an amalgam filling as we used it years ago, and just because it has preserved more teeth than the other fillings is no reason for using it when we have something that is better for our patients.

As to the preparation for an amalgam filling, which was discussed by Dr. Corbett, it seems to me, it would take much longer than the preparation for a gold inlay, and the fact that it is cheaper is somewhat against it. I think the preparation for the cast gold filling would be so little as compared with the preparation for an amalgam filling that it would be preferable to give that little bit and do the work according to our latest known methods, and that is, to give the patient the benefit of the gold. The fact that he has to trim the filling, as he stated, would lose a good deal of the contact point, and for that reason alone I would condemn the amalgam filling for large restorations.

Dr. Gethro in his paper spoke of using judgment in knowing where to use foil or the gold inlay. I think that is one of the hardest things for us to decide. There is no question in my mind but what the gold foil filling put in, as Dr. Gethro or as Dr. Johnson would do it, is far superior to any other filling material we have on the market. But there are few of us that are so capable, or who have mastered the technic as these gentlemen have done, and it would be wrong for us to attempt to put in a large restoration with a gold foil filling. If we carry out Dr. Black's technic in regard to extension for prevention, there is no question but what any operator can make a comparatively good and lasting cast inlay.

Dr. Coolidge mentioned the percentages of failures. I think that if we carry out Dr. Taggart's method, as it was given us five years ago, carry out his technic in the way of preparation of the cavity, and the use of hard wax and the investment material, we will have very few failures with our cast inlays.

Dr. Coolidge mentioned the fact that with the disto-occlusal or mesio-occlusal surface, it was hard to get the gingival margins with the hard wax, and his suggestion was to use soft wax, placing it back into the cavity. I think you will find no trouble in getting an accurate model of that cavity. I find that by using the hard wax there is little or no danger in shrinkage or expansion, whereas with the softer wax, there is more danger of the wax giving because of the temperature. You can not chill it in the mouth. While you are taking it out the temperature of the mouth will soften it sufficiently to distort it.

In regard to the percentage of failures, as the gentleman gave it, I do not believe it is a very accurate percentage, because here in Chicago I dislike to believe the majority of dentists are putting in fifty-five per cent amalgam fillings. I do not believe that is true, so that statistics of that kind I feel are not of very much use to us.

I would suggest in the use of cast inlays, where Dr. Coolidge, I believe, stated pure gold may make the best casting, but it would not stand the stress, and it would be necessary to flow a little solder in order to preserve the point of contact, that it is not very good practice to depend upon pure gold and then flow solder over it. I think the point of contact would be as good if you depended upon the alloy gold, No. 22 karat, for instance. I find the margins in the inlays I cast are much more perfect with the twenty-two karat gold than they are with the pure gold. In flowing solder over the inlay one would be apt to run it over the margins and spoil the fit of the inlay, and by using alloy gold you would avoid that.

Dr. J. N. Crouse:

I commenced practicing dentistry when there were no engines, and no burs, fit to use. We did everything with the hand. The young dentists of today do not manipulate enough with their hands. They do everything with the engine and with burs, and in the dental colleges in the first session of the first year the students should be put to operate without engines and learn how to manipulate with the hand.

I can make a better foil filling in less time than I can a cast filling, and the fillings I am ashamed of are my cast fillings, because

I have not learned to do it as dexterously as I should do, I suppose. The fact is there are several features about the business of cast inlays we must take into account. You get a cement that expands, or else it shrinks enough to spoil it. If you have too much cement in putting in the inlay or if you have too little, or it is too thick, it will not go home. I have been taking these out and resetting them as fast as I can. Take an instrument, heat the inlay as hot as the patient can bear it for a time or two; it will destroy the integrity of the cement, so that it can be knocked out easily. You can take bridges off easily by the same method.

I can make a gold foil filling with less effort to me, because I have learned how to do it, than I can put in a cast inlay. Of course, the time has gone by when we put in cohesive gold and start retaining pits and spend four or five hours in building up a big gold filling. I use over the margins non-cohesive gold. I lay a big pellet of gold against the wall of the cavity and drive the cohesive gold into it, protecting the margins and saving time.

I have never put in amalgam fillings because I could not get money enough for them. I can put in a gold foil filling almost as quick as an amalgam filling, and if I charge my patients as much for amalgam as for gold they complain. The great trouble is that we do not charge enough in many cases for our services.

Dr. George W. Whitefield:

I want to call attention to one thing which few people realize or consider in inserting amalgam fillings. If we study the physics of two dissimilar metals we will find that they create a battery; that the positive element is decomposed and also the fluid is decomposed around the negative element when that battery is in operation, and destruction is carried on about the negative element. Now, to apply that to a filling in the mouth the gold would be the negative element, and the amalgam or tin would be the positive element.

I have here an instrument which is called a galvanometer, and I would likes some gentleman to give the readings to the dentists present while I conduct the experiment, so that they can see what is done by an amalgam or gold filling. I take a tooth brush handle, drill two parallel holes, and form cavities at the end. I insert wires and attach a filling of gold on one side and amalgam on the other. This forms a battery.

Some years ago I made such a battery and had it tested by

Prof. Crew of the Northwestern University, and he found that the voltage was about equal to that of a Daniel cell, about nine-tenths of a volt. It is possible with a few batteries composed of fillings to ring a bell and to do ever so many electrical stunts.

Some years ago I began investigating along these lines, but owing to the necessity of devoting so much time to the earning of my bread and butter, my health gave out and I had to drop this work. I hope some day that I may be able to get some student fresh from college who will see his way clear to take up this work where I have dropped it, carry it on, and show what happens with amalgam and gold.

The very last amalgam filling I inserted was in 1887. It was a filling on the distal surface, with a gold filling on the mesial. It was inserted for a lady. These fillings were not so very close to the pulp; but the excitation of the nerve from those two caused the death of the pulp. That lady's sister is Mrs. Whitefield.

I want to call attention to another thing that happened the same summer. I had done considerable work in a lady's mouth. This lady was a patient of a dentist about whom we knew a great deal, but he unfortunately never charged sufficiently for his work to properly finish the fillings. They were plastered in, so to speak, and I had to replace a great many of these the first year she came to me, and the second year I replaced many more. It would be easier if the fillings were polished. The teeth were tightly wedged, and the proximal fillings polished. In two weeks she was in absolute distress, could not eat, could not clean her teeth, and could hardly do anything with them with comfort. Why? I had done what was equivalent to reamalgamating the zincs of a battery. When I polished the oxides off I started up a galvanic action; the gold fillings which had been inserted a few weeks were sensitive around the margins, so that a toothpick caused pain. (Here Dr. Whitefield exhibited a galvanometer borrowed from the department of physics of the Northwestern University.

DR. J. H. PROTHERO:

I feel that Dr. Corbett has presented his subject in an attractive and forcible manner. The problem of the amalgam filling is one of vital importance, since it is pre-eminently the filling for the poor, and the poor we have always with us.

His method of technic may or may not be in accordance with the ideas of every one present, but certainly the care he recommends in the finishing of fillings of this class, together with the records of the stability of work done in his own practice, are worthy of consideration, and demonstrate the value of proper finishing. These records running back for ten, twenty and even thirty years, prove conclusively that if amalgam is properly manipulated and finished, it will conserve the usefulness of the teeth.

I am sure Dr. Corbett would much rather place gold fillings or inlays in preference to fillings of the class under consideration, yet in his practice, as in that of most any other practitioner, there are cases where, from the standpoint of expense, amalgam is indicated.

The charts which have been passed around this evening show that four hundred thousand children are in need of dental services. Many of the parents of these children are unable to pay for gold fillings or inlays. I believe the estimate given by Dr. Corbett that 50 per cent of fillings inserted are amalgam, is not too high, and perhaps if all those to whom cards had been sent, had responded, the average would have been raised.

DR. ARTHUR D. BLACK:

I wish to speak briefly of three phases of this subject. First, a word in regard to cavity preparation. I have been much surprised tonight to hear so much talk of the difference in the way cavities are prepared for the different fillings. If you gentlemen here could be present at one of the annual meetings of the National Teachers' Association and see what cavities are presented there by the teachers in the different schools, you would be very much impressed with the fact that the matter of cavity preparation, so far as it is taught in the schools today, with the exception of very few schools, is practically a settled proposition. Take, for instance, the proximo-occlusal cavity in a biscuspid or molar tooth; I would make almost exactly the same preparation of that cavity, whether I put in an amalgam filling or a gold inlay, and there is no reason why the cavity should be prepared differently for either one of the three. The cavity may be prepared in such a position until you can place any one of the three absolutely without any change in the cavity preparation. The cavity should not be prepared for an amalgam filling or gold filling that is wider at the gingival than at the occlusal surface in any case when you are making proper cavity preparation. You are not considering the histological structure when you prepare the cavity in that manner. It is up to the dental profession to study what has been written and published on the matter of cavity preparation. This matter has been thoroughly presented by men all over the country who consider it a settled proposition. It is a sad reflection in my mind on the lack of study among the members of the dental profession that we should have such a presentation of the matter of cavity preparation under discussion here tonight.

A second point I wish to speak of was mentioned by Dr. Coolidge. I do not believe he fully impressed on the audience the difference between density and hardness of gold. You take a cast inlay of pure gold of so much specific gravity, and a gold filling of the same specific gravity, and the cast gold inlay under stress of three hundred pounds will be compressed five times as much as the malleted gold filling, because the latter is harder. There is no difference in the quantity of the gold, but the manipulation of the gold and malleting has made it more resistant to the stress of mastication. That is the weakest point we have today in the gold inlay—one of the very weakest points I would say, that it will not stand the stress of mastication as well as malleted foil. The one is hardened by malleting; the other is annealed by casting. That is one of the things not well understood by those who use the cast gold inlay, and it should be studied before so many are made of pure gold.

A third point I wish to speak of is the use of amalgam. One phase of Dr. Corbett's paper, which is a large proposition, is one that is going to be serious to the dental profession before many years from the fact that he has shown here, and what is now already such a large use of amalgam. The percentage of amalgam is going to increse appreciably as a filling material in the next ten years if I am not much mistaken, because there is now going through the country a wave of public education which is going to bring more people to the dental profession to take care of than the dental profession can possibly do. This increase in percentage of people will be very largely from those who can pay the smallest fees, consequently the demand for amalgam will be increased tremendously. I think Dr. Corbett stated that very clearly in his paper, and it is a fact which will be impressed very strongly on the dental profession before many years have passed.

He also brought out very clearly the fact that if amalgam is to be used, it ought to be employed in a more scientific way. There is no question but what if amalgam is a good filling material, it should be used in the cavities of teeth of patients who are unable to pay for gold fillings. Dr. Crouse has stated in a few words the principal reason why amalgam fillings were not made better, and it is because the fees obtained for them are not large enough to justify the time that should be spent on them. Students in our dental colleges are putting in much better amalgam fillings than practicing dentists. Why? Because time is no object to the student in a dental school; he is not paid for what he is doing, and there is no limit to the amount of time that he may put in on amalgam fillings; consequently, in most of the schools amalgam fillings are well put in. When a man gets out to practice dentistry it is a question of competing with other practitioners in his neighborhood. At first, he probably puts in good amalgam fillings, because he has time, but later he finds he must increase his fee or put in these fillings less well, and most practitioners do the work less well. If a man uses amalgam and is honest, he ought to put in as good a filling as he knows how to put in. It is a disgrace with the knowledge before us in our literature that so many awfully poor amalgam fillings are inserted.

Dr. Crouse:

Does not that hold good with regard to gold fillings?

Dr. Black:

I am not making an exception, but simply a statement in reference to amalgam. Of course, the same is true of anything men may do in any walk of life.

Dr. F. T. Hays:

In the first place, I wish to reply to Dr. Johnson's criticism of Dr. Corbett's use of cement under amalgam and gold. I have always considered Dr. Johnson one of the most intelligent and finished operators we have ever had in our city or in the practice of dentistry. But I find that there are still some things for him to learn. If he thinks operators are indiscriminately using cement in a soft plastic condition forcing it out over the margins of the cavity by hammering gold or forcing amalgam into it, without cleaning the cavity margins as clean as they were prior to the use of the cement and then waiting for the cement to harden sufficiently to withstand the force of condensation of the gold or amalgam to complete the filling, which makes a cement lined gold or amalgam filling as perfect as any cemented inlay, he is mistaken.

Dr. Black spoke of the cast inlay not being hard enough. There is no law prohibiting an operator from making a cast gold inlay as hard as a foil filling. If you place the inlay in the cavity and with the rapid blow mechanical mallet hammer it thoroughly, you have the same resistance to the force of mastication as you have in an all foil filling.

I have in my practice—and I think every man has with few exceptions—to deal with people who are unable to pay a full fee such as we would like to get. I would like to have Dr. Crouse or any other man answer the question of how to raise a family of five children at a salary of $125 a month and pay the dental operator $25 per hour for putting in gold fillings, and have to send them about once a year to undergo a dental examination. I have that condition to contend with. I have to use amalgam fillings in such cases, and I can show you amalgam fillings that have stood for ten and fifteen years that are as good as any foil fillings that have remained for the same length of time. Fifteen years ago we did not have the amalgams we have today. The men who are using and operating all gold do not know how to operate amalgam. They have something to learn. Many times they dry out the amalgam too much, and before they get a contour they get a flaky mass. It is not worked in as it should be, and there are many points of detail that must be watched as carefully as those for the insertion of a gold foil filling.

I heartily agree with the operator who works non-cohesive gold. I work it myself and have always done so extensively. I can put some foil fillings in the occlusal surfaces of molar teeth in ten minutes the same as other operators who use non-cohesive gold.

Where are the teachers who are teaching it? They do not know what non-cohesive gold will do without operating it.

There are certain conditions facing the members of the dental profession which we have to meet. I am not able to get twenty-five dollars for every filling I insert, but I am not ashamed that I cannot get it.

Dr. George W. Whitefield:

Some have suggested that if you cannot use gold and amalgam without destruction around the gold filling, why not use all amalgam. If you place a number of fresh amalgam fillings, they will be the positive element to older amalgam fillings in the same mouth. You will find an amalgam filling that has stood well and has dislodged a great many gold fillings, is itself dislodged by fresh amalgam because it is a negative element under these conditions.

Dr. H. S. Henderson:

With reference to amalgam as a filling material, it expands one-twenty-thousandth of an inch. The majority of dentists do not know how much mercury to use. They put in an amalgam filling and expect it to stand up without shrinkage and expansion. As a matter of fact, I do not know of any dental students who are educated along this line. They do not know how much mercury they put in or should put in. To my mind there is no amalgam filling inserted where the proportions are accurately measured and first tested in the laboratory to find out what the proportions are. Personally, I have been using a scale for twenty-three years, and I have not put in an amalgam filling in that time that has not been measured accurately so far as the mercury and alloy are concerned. I had the opportunity a short time ago of examining the mouth of a lady who had a broken tooth, but there was no sign of decay around the amalgam filling that had been inserted eighteen years previously. I took it out, although there was no sign of decay. I had left the margin of the cavity a little too fine; I had cut it away too much. There are no two amalgams made which require the same amount of mercury, nor the same amount of alloy. There are no two amalgams that are made according to the same formula. One will absorb mercury much quicker than the other.

Dr. Corbett (closing the discussion on his part):

I did not expect that the members of this society would all agree with me regarding the paper I have presented to you on amalgam. The paper probably gave you the idea that I was an amalgam fiend, but such is not the case. I insert three times as many cast inlays as I did a year ago, but I prefer to put in gold foil fillings. I like them best of all where they are admissible.

Dr. Gethro (closing the discussion on his part):

Some one raised the question as to the places where certain fillings should be placed. I thought I covered that as well as I could in the time I had at my disposal. I took certain cases and indicated what sort of fillings I would put in in such cases. There were lots of cases I could not cover at all, but I tried to do it as well as I could.

Dr. Coolidge (closing the discussion):

A word in regard to the indications. It is hard to say just where any one filling is indicated, as has been pointed out by Dr. Gethro. A man is justified in using that material as a filling with which he can get the best results in a given case. When any new method of filling teeth comes out, we are not in a position to say where it is indicated until we have mastered the technic of making fillings by that method and have learned its advantages and disadvantages. I do not think it is possible to give unyielding rules for the indications for inlays, or for the other methods of filling teeth, because the conditions at hand in each case must be considered.

There is one other thing I will say in regard to perfect gold fillings and the opportunity afforded by gold inlays for carelessness. There was one remark made in that connection in discussing the gold inlay. If there is an opportunity afforded for carelessness in the gold inlay, I am sure it is an opportunity that is assumed and not one that is granted. The gold inlay requires just as much pains as the gold foil filling, if not more. I believe it requires more pains to get a perfect gold inlay in certain cases than to get a perfect gold foil filling.

I was much impressed recently with a visit to one of our high schools—the Crane high school, where they teach manual training, in noticing the joints they require the students to make in their wood-work. If we always made such joints in our inlay work as they make in their wood-work we would not have a discussion about the margins of inlays or of the washing out of the cement. The trouble is we do not always get perfect joints, and that is a matter of technic entirely. I do not think there is any danger of any one of the three methods going out of existence. I am sure all three are here to stay and will always remain with us.

ST. LOUIS DENTAL SOCIETY.

DISCUSSION OF THE PAPER BY DR. STEWART ON "PUBLIC SCHOOL INSPECTION."

Dr. T. E. Turner:

Not having a copy of Dr. Stewart's address I will not attempt to discuss it, but will offer for your consideration a few facts relating to medical inspection, dental inspection, oral hygiene, its advantages and economic value.

The world has already recognized the right of a child to mental development at the public expense, and is beginning to recognize its right to physical development at the public expense also, as shown by the establishment of hygiene departments in the public schools. The next step will be the recognition of the fact that medical inspection to be effective to the utmost must include a recognition and correction of the lesions of the mouth and teeth. There is a moral obligation that must be fulfiled, for when the state by its compulsory education laws requires that a healthy child be placed in the environs of a school room where it is subject to infection from various sources, carries with it the obligation that the sources of infection as far as possible be eradicated.

In support of the above statement the following is offered: Statistics from dental inspection of school children's teeth wherever made show that from 75 to 97 per cent have decayed teeth and other mouth lesions.

The work of Miller originally undertaken in Koch's laboratory established the fact that the buccal cavity is the breeding ground of many varieties of bacteria having pathogenic properties, and that as a source of infection an unhygienic mouth is of major importance in that it constitutes the breeding ground and is the portal by which the larger proportion of disease producing germs find entrance to the body.

The following incident confirms the findings of Miller:

One of the commissioners of public health of Chicago reported recently, that in the public schools of that city, notwithstanding a rigid process of isolation disinfection and inspection of scarlatina cases, the readmission of these patients was almost uniformly followed by fresh outbreak of scarlatina in the school room to which they were returned. This fact attracted so much attention that medical inspectors went over the cases again to see why this occurred, but were inclined to regard the recurrence as merely a matter of coincidence. When cultures were made from cavities in the teeth of these children it was discovered that for a considerable period after the child had returned to school there were germs of scarlatina in these cavities and that fellow scholars were being infected through the common use of drinking cups, lead pencils and books.

Dr. W. A. Evans, commissioner of health for Chicago, says: "The major harm is from those decayed teeth being harbingers of bacteria that slowly poison, and as a result of that slow poisoning there is in many instances enlargement of the neighboring glands, and those glands stand as vicarious sacrifices protecting the remainder of the body from the invading poison. And there is nature's route by which the poison finds its way into the body. It is relatively easy to see how teeth decay and how accumulation of filth takes place in those decayed teeth, it is not difficult to see those enlarged glands, but it is far more difficult to understand why the child is pale and anemic. Absorption is taking place from those affected areas and the influence of that absorption is felt not only in the neighboring glands but also in this group of physical conditions that are far removed and the relation of which is difficult to understand. It is not only difficult for the medical man to understand this, but it is far more difficult for the family to understand it."

In regard to scarlet fever he says: "We turned loose lots of children from the hospitals when the scaling had stopped, after which other cases of scarlet fever came back to the hospitals from those families, and that experience has been duplicated all over the world. Now we know that a large number of these returns are due to the causative agents found lingering in the follicles of the tonsils, in cavities in the teeth and other obscure recesses in the mouth and nose."

Dr. Evans further says: "A while ago we had an epidemic of diphtheria break out in a Chicago school, we could not run it down. We went through that school and found nine children, and apparently well children at that, who had active diphtheria bacilli in their mouths, they were not sick themselves but were capable of inducing sickness in others. These diphtheria bacilli may remain latent in the nose, throat, tonsils and in cavities in the teeth, and that is something that is not fully understood even by practitioners of medicine who do not know dentistry."

The fact cannot be questioned that decayed teeth are carriers of all the well known bacteria which inhabit the mouth.

That decayed teeth causing a disordered masticating mechanism also cause a train of nutritional disorders because of an inability to properly masticate the food is generally recognized, chronic dyspepsia, intestinal indigestion, and the auto-intoxication caused by absorption of bacterial waste products developed in the fermenting masses of imperfectly masticated and infected food, are examples of pathological conditions caused by inability to properly masticate. Bad teeth mean poor digestion, poor digestion means poor assimilation, poor assimilation means poor health, poor health means poor progress in school studies, a weakened mental efficiency.

In Judge Caldwell's juvenile court in Cincinnati, no child is placed on trial until the judge is satisfied that he is in a normal state of body and mind. The court has no physician, but a number of specialists of high standing volunteer their services, it often happens that a child's delinquency is traceable directly to the state of his health, the defect cured the delinquency departs. This is one of the great discoveries of the juvenile court. Watching a stream of children drifting through a juvenile court you become thoroughly convinced that crime and disease are well night inseparable. No words could frame an indictment of society so terrible as these mute witnesses.

The juvenile court of Chicago has made a closer study of this phase of the delinquent child problem than any other court. Dr. Jas. A. Britton, the detention home physician, examined 3,646 children during 1909, 2,367, or 65 percent were found to have bad teeth. Dr. Britton says: "We have every reason to believe that an aching tooth is frequently the first cause of irregularity in school attendance, and everyone knows that this irregularity in school attendance is one of the first steps towards the juvenile court."

Turning to the economic side of the question, Dr. Luther H. Gulick, formerly physical director of the New York public schools, now director of the department of child hygiene in the Russell Sage foundation, says: "Investigation has shown that it takes children with defective teeth at least six months longer to complete the eight common school grades than those without defective teeth, that costs the city much money." Dr. Gulick further says, the handicap for a child with decayed teeth is 9 per cent, and Dr. J. N. Hurty, secretary of the Indiana state board of health, says the 9 per cent handicap due to decayed teeth could be wholly removed at an expense of one-fifth that incurred in retaining it. If it cost more the conservation of the physical resources of the children of this country demands it.

William R. Woodbury, M. D., of Boston, says: This problem is not altogether one of benevolence, it is in a large measure a problem of economics. Health is needed for great industrial production, every case of disease involves an immediate economic loss to the community in which such events occur. There is coming a great change in the practice of medicine, surgery and dentistry, and a much greater proportion of the attention of these professions is hereafter to be devoted to prevention rather than cure.

The school clinics in Germany have been in operation a sufficient length of time to demonstrate:

(1) That the time expended in putting the teeth in order was far less than the time formerly lost from toothache and disability caused by diseased teeth.

(2) That the cost of keeping the teeth in order was more than compensated for by better health and a consequent reduction in medical expenses.

(3) That the child became physically stronger, secured a higher average in his studies and was easier to control.

Dr. Kerr, medical officer of health for education to the London county council, after a visit to the Cambridge Dental Institute, says the connection between children's teeth and tuberculosis may not at first sight be quite obvious, and explains that bad teeth mean faulty nutrition, digestive disorders and a consequent weakening of the system, which is therefore less able to resist the attacks of the tubercle bacilli. Consumptives in hospitals, says Dr. Kerr, almost invariably have exceptionally bad teeth, a fact which he has noticed for many years. In establishing the "Infantry" as the Cambridge Dental Institute is called, the founders were building better than they knew. This connection between consumption and bad teeth will no doubt do much to popularize the movement in favor of school dental clinics. It is better to prevent than cure. One of the most important points to which attention has been directed at the tuberculosis exhibition at Cambridge is the fact that people's state of health has a great deal to do with their power of resisting the attacks of the tubercle bacillus. This is no new thing, of course. Most people realize that a good bodily condition is a great protection against all kinds of disease, but a very important aspect of the case has not received the prominence it deserves, one that is bound to have far reaching results and may go a long way towards realizing the hope that tuberculosis may be stamped out in the course of a generation or two. It is the saving and preservation in good condition of the teeth of the rising generation. Mr. Gant, the dentist in charge of the Institute, in answer to an inquiry stated that the cost per child, provided they were taken in hand in good time, before the teeth became badly decayed, was 2s, 6d per annum.

Indisputable evidence is furnished in this country by the Marion school class of Cleveland, which was exhibited at the recent meeting of the N. D. A. This class numbered 27 children, showing the worst oral condition out of 846 pupils as determined by a dental inspection. Miss O'Neill the principal says: We had children of good mentality represented and those of the poorest. In fact, one of the little girls had been pronounced mentally defective by our medical inspector. We had well-meaning, tractable pupils and incorrigibles among the group, three truants among the number were on the verge of being called into the juvenile court, and one boy who had repeatedly given trouble in the school room and playground had his papers made out for his transference to our boys' school, where special attention is given to such pupils. The teeth of these children were put in perfect condition and their mouths kept in a hygienic condition for 14 months, six psychological examinations were given, two before any work was done, two while the teeth were being treated and two after all work had been finished. The examinations were to test memory, spontaneous association, addition, association by opposites and quickness and accuracy of perception. They were conducted by the school authorities and were prepared by Dr. Wallin, a psychological expert. The general average increase was 99.8 per cent, one girl making 444 per cent. Miss O'Neill says not only was this mental gain made, but there was a physical improvement very marked in every case, and spirit of self-respect was engendered that corrected disobedience, truancy and incorrigibility. Two girls who before had sallow complexions and pimpled faces finished up with clear skins and rosy cheeks, a girl who suffered much from flatulency and sick headache, was entirely relieved, a case of kidney trouble was almost entirely cured, a boy was immune from contagion of scarlet fever, though living in a family and helping to nurse six younger members who had contracted the disease. Undoubted proof was established that by keeping the teeth in perfect condition, living up to the laws of oral hygiene, these 27 children doubled their mental ability, gained in power and endurance and bodily strength, showed marked improvement in personal appearance and habits. A physical, mental, moral gain in the child produces an economic and financial gain to the community. Can anyone question that a practical working knowledge of oral hygiene is worth while?

Dr. Wm. Conrad:

I felt the compliment when our talented president asked me to talk tonight on oral and dental hygiene, as applied to the indigent children.

Hygiene means the art of preserving health, which is the art of preventing disease. Oral hygiene is the art of preventing diseases of the mouth. Dental hygiene is the art of preventing diseases of the teeth, gums and alveolar process.

If these definitions are correct, (and I know they are, for I looked them up) my subject should be, "Prevention of Oral and Dental Diseases," but as there is nothing in a name and "Oral and Dental Hygiene" seem to have the "right of way" let us stick to it, and give it a value.

The two parts of my subject, "Oral and Dental Hygiene" are so closely allied in practice, that one cannot be considered without the other; both are parts of the whole, and must be considered as one.

The component parts of healthy tissues have always been the same atom for atom—this rule of nature never varies where the tissues are healthy. If this rule is true, the component parts of normal teeth, gums and alveolar process must always be the same. If they are not, there is a state of disease. If this is so, and the tissues are always the same there can be no such thing as naturally good or bad teeth. No such thing as hard or soft teeth, no such thing as inherited bad teeth, no matter what your father or mother may have said about what your great-grandfathers or mothers *et al* said about inherited bad teeth of the family for generations. Healthy teeth are always the same, always good, and will remain good for all time; great-grandfathers or mothers to the contrary notwithstanding. I do not doubt that the generations of men and women long since past and gone had bad teeth enough and to spare, but do not for a moment think the bad teeth in a family is a price paid for sins passed from father or mother to son or daughter and so on to the end of time. Bad teeth can never be inherited, although some specific family markings may be noticed from one generation to another, but never the so-called bad luck. At the same time let me make clear to you that dental disease is a price for something and this is a big price, let me say, but we must all pay for bad sanitation, still the price is a personal one. Most so-called bad teeth are caused by dirt, and dirt only. Perfect oral and dental sanitation will correct this condition. The last statement is true and can be proven by anyone who will follow the rules of oral and dental hygiene but for a short time.

Mothers should try perfect dental sanitation with their children. They will see the improvement it will show in the freedom from dental diseases. Just in proportion as they reach the perfect standard of dental hygiene, just to that degree will the children (and old people as well) become immune from dental diseases. This is no pipe dream; no weak-minded hallucination, no Pied Piper music leading us into blind fallacies of practice. It is no fallacy and we can give hope to all people, even those supposed to be saddled with the oft-repeated story of inherited bad teeth in families otherwise clean. Some of them are not too clean, but just clean enough to nail this lie of inherited bad teeth for all time. Oral and Dental Sanitation is no fairy tale. It has become a truth, and a truth proven to me by actual practical demonstration extended over a long period of years. To those who follow the principles of oral and dental sanitation they will find it will always make good. It never fails the faithful worker and makes the teeth and mouth better and better to the end of life. If we only keep in mind the one central idea, that perfect oral and dental sanitation saves teeth. Also the fact that a clean, healthy mouth means immunity from all dental diseases, and promotes a higher mental and physical personality. The mouth is the great gateway through which most of the good things and some of the bad ones have to pass in order to enter the human body. Keep the mouth clean and healthy and the general health will in a measure be protected from the dangerous infections causing constitutional diseases to which we are so constantly exposed.

Your oral and dental hygiene committee has planned a practical working scheme looking to the dental care of the many thousands of indigent school children in St. Louis. Your committee came on the field late, long after the dentists of many large and small cities had about worked out their enthusiasm, but we hope to profit by their mistakes and to do something worthy of the St. Louis Dental Society, the oldest dental organization in the United States and perhaps in the world, having a continuous record from 1856. We find the work most difficult and for that reason we are going slow. Our slowness is not from any lack of faith in the need of the work. All of us know how very urgent it is. We are trying to so plan our work that mistakes will not discourage us with the enterprise or queer us with the very people to whom we must look for help when we have paid out our last dollar, and need friends and financial support to keep the work going. It is not meant to be a charity, it can never be, so long as the law compels all indigent children under 14 years of age to attend school, and are forced to do so by police supervision. The law compels and the police enforce attendance. The state must provide a way to take care of the health of these children when they are compelled by law and forced by the truant officer to attend school. The time for state care has not arrived; the people are not educated up to it; the work is now to them. We will have to look to the public for a time at least for the means to carry forward the plan of your committee. These indigent children must ke kept in health by some means to enable them to get the best out of the education the law compels and forces them to take.

The day will surely come when the teeth of the indigent children under 14 years of age will be taken care of by the state, and paid for by a general tax for this purpose. It will not be looked upon as a charity but as an investment, which will pay large dividends to the state in the mental, moral and physical superiority of the future men and women. Some of these indigent children if cared for properly, will become distinguished beyond the comprehension of the most sanguine minds of today. For generations it has been demonstrated by many striking examples that poor children placed under proper inspirational environments (by accident or otherwise) show great mental, moral and physical development, and have in the past and will in the future, exert a potent influence for good in the development of the world, and the betterment of their fellow-man. I am thankful the great Creator looks after his own so faithfully, as the fight these children have to make against discouraging obstacles, would be very hard indeed without some aid from a helping hand, and a helpful moral support given to them by a generous people.

Your committeee look to the dentists of St. Louis and the good people of our great city to help us make such a showing for good that nothing can stop in the benefits we expect to render these young and poor children. Educate these indigent children under 14 years of age and they become a valuable asset to the government by making it richer. You cannot properly educate them without taking care of their teeth, as it is a known fact that toothache alone keeps more from school than all other combined causes. What greater help in life can a boy or girl have than a good-looking face, made so by good-looking, healthy teeth. I saw recently in a newspaper that some court considered a good-looking face had a value of $350. If the teeth do not get proper care, and these necessary organs are lost, the face loses its natural expression, and the jaws are lamed for life, and we have a deformed cripple, made so by someone's neglect.

Your committee on oral and dental hygiene is willing to give time and money for the benefit of these children but it cannot carry on the work alone. It must have help from the dentists, the city, the school board and from the people in general. Everybody loves children, especially poor children of this tender age. I believe everybody will help. Who can refuse—when the need is so great, to give something to make these children more healthy, both mentally and physically.

Your committee hope to outline some practical plan which will keep the mouth and teeth of these children in a fairly healthy state. It is a large undertaking, and we realize it will try us to the limit. We must start the work in a small way, and make haste slowly. When we learn the trade, we will do more good with less expendiure of energy. Remember, we are doing only our professional duty in trying to promote the future success and happiness of these indigent children. A good deed well done provides its own compensation. This thought will be our reward.

The main feature in the plan of this committee is to make its work of practical value to those most in need of dental services. Those unable to attend school on account of dental diseases will be considered most in need of our attention. The medical hygiene department of the school board, through their organized inspection system seems to us to be the most reliable, and this department will recommend only those who are worthy and indigent. We take the recommendation of the medical hygiene department of the public schools as prima facie evidence that each case has been investigated. Children who can pay for dental services, will not be sent to us for treatment.

Your committee made a start last spring by working for needy children whose cases appeared most urgent to the hygiene department. We did a great deal of work, as well as a great deal of good before the dental schools closed for the summer, and by this work we learned how necessary it was to have the plans of the oral and dental hygiene committee in practical working order as soon as possible. I take pleasure in saying that the members of your committee feel under very great obligations to Drs. Owen, Kennerly and Harper, deans of the Barnes University, Washington University and St. Louis University, dental departments for the help they gave your committee when most needed. I regard these dental deans as royal good fellows—they gave us help willingly, actively and generously at a time when it interrupted their school work most seriously. I thank them in this public manner to let you know how much the committee appreciate their help.

The mouth is an important and peculiar cavity and all within it somewhat different from any other part of the body, and the Creator in making it so, acted more wisely than any of us can ever understand, unless we make a careful study of the tissues going to form this cavity, together with their functions. The mouth was made in this way to protect us simple-minded men and women and children from danger, and to safeguard our general health. With the mouth in health we are rendered, in a measure, immune to the dangers our daily contact with so many diseases expose us.

The Creator knew a thing or two about preventing diseases, when he made the tissues of the mouth peculiar and different from all others. It was made so to protect us from diseases or accident. He also provided the cavity with an abundance of antiseptic saliva to wash out and keep clean all of its parts. If it was not for this wise provision of nature, we would certainly be poisoned daily, by infections caused by septic matter in the mouth.

The teeth, gums and process require more care today than formerly, as we are drifting away from the simple food and the simple life. We love the tender cold storage food stuffs to the exclusion of all other kinds. Any food that requires much more than a pound or two of jaw power, is not to our liking. The cold storage products are our delight. But we must wait our time with patience until our stomachs take on the vulture type, which will enable us to eat without teeth and our stomachs to digest without distress and to disintegrate cold storage products to which we will be limited. Before we can reach this state of perfection we must pass through a preparatory period. While waiting for the time where this vulture type of stomach becomes fixed and ready to do work, this period of preparation to suit changed conditions, it is a critical time for the general system, and the part to suffer first is the mouth and the teeth. Food stuffs will go back to the tough kinds the changed conditions of life prevent, and people cannot depend on the mastication of hard and tough foods to keep the mouth and teeth clean and healthy, as such food is not to be had. Oral and dental sanitation is our main hope.

The tissues of the mouth are different from all others in that, the mouth must be kept clean to keep it healthy and the person free from the suffering incident to most all oral and dental diseases. Where the mouth and teeth are kept perfectly clean, dental diseases cannot get a hold and for this reason cannot exist. Perfect oral and dental sanitation is a sure preventive of all mouth and teeth disorders, and does a great deal towards preventing most general diseases by lessening the susceptibility to infection. It should be the first duty of all careful physicians to see that oral and dental sanitation is maintained as far as possible among their sick patients. Unsanitary condition of the mouth and teeth cause general and disastrous infections of the whole body when broken down tissues, diseased secretions, food debris, infectious pus, and dangerous disease germs, are allowed to remain in the mouth for ten days, months and in some cases for years, undergoing a constant change from decomposition and fermentation, until it becomes a putrid mass constantly exhaling a foul combination of all the hateful smells ever known, and such a dreadful smell it is, like no other. And this condition is made possible by a diseased and rotting mass of foul corruption retained in the human mouth by someone's ignorance, carelessness, or criminal negligence. The person having such a mouth is a dangerous and constant menace to the health of all other people. In these days of progress, there is no excuse for such a condition when the time and care required to keep the mouth and teeth clean is so little and the benefits to the individual so great. Remember always the fact that, clean teeth never decay. That a clean mouth is free from disease. The normal saliva is a wonderful product of nature. To me it is the best mouth and tooth hygienic agent known. If you have ever had or seen a dry mouth, you will know what a blessing it is, and free for all. I have no doubt it has saved our lives many times. The great Creator did his work well. Now it is up to us to keep it in repair.

Perfect oral and dental sanitation will insure immunity from disease, and by perfect oral and dental sanitation I mean a perfectly clean mouth. Try it and see the wonders following the effort. The claim of those who follow oral and dental hygiene is that cleanliness makes the teeth better and prevents disease. This appeals to right minded people as being in line of progressive preventive scientific dentistry. Preventive dentistry, as well as preventive medicine, and law lead the world in their respective professions. It is honest and up-to-date practice.

I ask the St. Louis Dental Society to help the committee make a success of this work. It is no "fad" with us. The fad age has passed. The time has come for us to show by practical demonstrations that we can prevent oral and dental diseases, and by so doing improve the mental and physical conditions of these indigent school children under 14 years, and can make them better men and women for the work they must do in the years to come.

I wish to thank Dr. Stewart for the information and help he has given the committee; also the gentlemen who take part in the discussion for allowing me to be in such distinguished company, and the members and friends for the kind consideration they have shown me this evening.

Dr. J. H. Kennerly:

I feel somewhat like the minister who said to a member of his congregation that when he entered the pulpit that only he and God knew what he was going to talk about but, after being in the pulpit for a few moments, he realized that God only knew what he was going to talk about.

I feel very much in the same position myself tonight. The subject has been so thoroughly covered that there seems very little left for me to say. So far the speakers who have preceded me have not advanced very many ideas on the phase of the question that I want to talk on for a few moments. That is, how shall the oral hygiene question be handled in the city of St. Louis? I am possibly alone in my way of thinking on this subject. I began my first study of it something over five years ago. I approached the school board and wanted to make an inspection of the mouths of the school children in what I considered at that time to be the most cosmopolitan school in the city of St. Louis, offering to do this at my own expense and informing them at the time that I was not in practice and consequently had nothing to gain in a financial way by this examination. I was doing it for the purpose of being able to show the conditions that I believed existed in the mouths of the school children. After some time I received a letter from the superintendent saying that he did not consider it quite practical at the present time. Consequently, the matter was dropped.

But the subject of oral hygiene has been making such wonderful strides that the St. Louis Dental Society decided that something could be done in co-operation with the hygiene department of the public schools, the report of which was read by Dr. Stewart.

The report from the New York oral hygiene committee says, in 1889 the inspectors of this division examined 323,000 school children, and of this number there were 183,000 who had defective teeth. There are 3,878 dentists registered in the state of New York. Say for argument's sake, that there are 2,000 of these dentists in New York City with 323,000 school children, of whom 183,000 need attention, to say nothing of those handled in the regular practice, and then tell us how we are going to do this work. Are you going to give up your practice and do this work gratuitously? I don't think so. I never saw the time that services were worth very much that were given absolutely free. I want to say that if the city government of the city of St. Louis has the right to take the money we pay in taxes and set a broken limb or treat a case of typhoid fever, they have the same right to pay for having these childrens' teeth taken care of. If you look this proposition right square in the face and study it for five years as I have done, you want to get away from it and the farther away you get the happier you will be.

Here is a report from Cincinnati: They have accomplished something, but how? They paid for it, dollar for dollar. You cannot expect a man to give up his time to do this work for nothing. Last summer there were conducted in certain schools of the city, summer schools for the benefit of backward children. The Central High School proving too small, the high school department was forced to move to the Soldan. What caused these children to be backward in their studies and necessitated the establishment of summer schools in order to assist them in keeping up with their classes? I maintain that defective vision and defective teeth more largely than anything else caused the establishment of these summer schools and consequently I say that if a portion of this money spent for teaching was paid for the care of the teeth of the indigent children we would need fewer summer schools and the teachers would be enabled to have the regular vacation to which the teacher is entitled.

I have said as much as I think it is necessary for me to say at this time and I want to repeat that it is, in my opinion, absolutely useless to attempt to do this work by the profession donating their services a part of a day at a time. I feel that it can only be done by paying someone to do it, and if a thing is worth doing well, it is worth paying for.

Dr. Walter M. Bartlett:

If only God knew what Dr. Kennerly was about to say, I can assure you that I do not believe God knows what I am going to speak about in regard to the subject of the evening, as much has already been said.

This matter of hygiene and education in public schools has always been of interest to me, as well as to the majority of thinkers in the dental profession.

You have heard some suggestions as to the best way to start the clinic for the treatment of indigent school children. Some suggest raising money from people inclined to assist charities; others asking funds of the school board to equip what would be called the Public School Dental Infirmary, and to keep there paid operators. At present I do not consider either plan feasible. A start must be made first whereby the results obtained can be shown, and I consider what this society is now doing a good start, as the school children who have received attention in our college infirmaries have awakened a keen interest in the members of our school board.

I am a firm believer in evolution and by making a small and careful start in this work, obtaining good results which, combined with the establishment of public school infirmaries in other cities of this country, will then make it possible for this society to demand of our school board all that is needed for this purpose. All these innovations come after some other municipality has flashed the light. Medical attention, domestic science, manual training, and other side lines have been added to our public school systems in recent years, but not until the good results had been demonstrated in other cities. It is only a question of a short time before the school authorities will be made to realize that aching teeth are a factor in retarding mental development, necessarily increasing the cost of teaching.

In this connection I have two cases in mind, one cited for its amusing feature, the other to show the result of proper dental attention to the school child. In walking to my office one morning I met a child of about seven years of age crying as though her heart would break. She looked as though she belonged to some poor family. I said, "Daughter, what are you crying about?" She replied, "Oh, I have such a toothache and mother has made me go to school." Whereupon I told her that if she would come into my office I would stop the ache. She thanked me, but informed me that her mother had always instructed her never to talk or walk with strange men. This mother's instructions were correct. She was paying strict attention to the moral training of her child, but sadly neglecting the physical and mental development. Another child came to my office with his mother and made an appointment for dental services. He arrived twenty minutes late for his appointment and when he was taken to task about it, said, "One of th boys said I made a face at him and my teacher kept me in for it that is why I am late." I told him that he should not make face and he said, "I just can't help it." I said nothing more, an upon examination of that child's teeth saw plainly why he could no refrain from making what his class-mates call faces. I found in the two first lower molars large occlusal cavities, each containing a hypertrophied pulp rising at least 1/16 of an inch above the tooth, which forced the child to always keep his jaws apart, using only his anterior teeth to nibble with, so to speak. At times when bringing the jaws into occlusion the pain from these pulps would cause him to jump and squirm, which the other children considered "making a face." I asked the boy how he managed to eat. His reply was that he only ate soft things that he could bite on his front teeth. I next asked him how he was getting along at school and was told that he was always kept in and nearly always last in his classes. This condition had existed for months. In a short time I had relieved the conditions and attended to the teeth properly. He returned to me in six months for other services and in that time he had developed into a strong vigorous boy. He stated that he was never kept in and had made such progress in his studies that he had jumped two grades, which was considered good work. This case in itself shows the importance of dental hygiene in schools. Had there been a requirement for the examination of children's teeth this ward of the city could have completed his education much sooner.

The matter of dental inspection in public schools by committees solely for statistics in my opinion is not calculated to bring about the best results. I have heard it stated that it was only intended to bring about special benefits for the practitioner as when the child, upon its return home, showed the parents the chart those who could afford it would send the child immediately to the dentist, but unfortunately the indigent child was never benefited and so far as the statistics are concerned the profession is not any the wiser for discovering something that was pretty generally known.

Dr. E. E. Haverstick:

If the dentist does not examine the school children's teeth, how will they get general data regarding the condition of the teeth?

Dr. Stewart:

From the children sent to them for dental work by the examining physician.

Dr. E. E. Haverstick:

But these children cannot give data regarding the relative and general condition of all the school children's teeth.

One of the gentlemen who discussed the lecture said that he did not believe in examining the school children's teeth because every city where the school children's teeth have been examined the dentists have accumulated a great amount of data and that is all they have done.

I beg to differ with this gentleman, and sight Cleveland, Ohio, Rochester, N. Y., and Strausberg, Germany, as places where the teeth were examined systematically, and where a great deal of dental work has been done and is being done for the indigent school children, besides the great educational effect the examination has had on all the school children. We shall never be able to do all the work unless we get the children interested so that they will help us by keeping their teeth clean. If we have the data to show the parents the actual condition which exists, they also will become interested.

Last year there was a petition presented to our board of education in which the offer was made by dentists to furnish an equipment and materials and have a dentist work each afternoon for indigent school children, provided the board of education would furnish a room, an attendant and other necessary things, allow talks to be made to the children and patrons in the various school buildings on the importance of the teeth, and to permit the examination of the school children's teeth. They accepted the entire petition with the exception of the examination of the teeth, which was considered so important that the work was not taken up.

Dr. Stewart's lecture tonight makes us better able to appreciate the great service which he has rendered our city. It is only through a man of such ability and such energy that so much good could have been accomplished in a few years. He has his medical staff and nurses well organized and I hope that the next step will be to have a dentist on his staff.

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EDITORIAL.

THE CANADIAN ORAL PROPHYLACTIC ASSOCIATION.

In some respects this is a unique organization, and it would seem worth while to call attention to its objects and to the work which it is aiming to accomplish. It was organized by several of the dentists of Ontario for the purpose of improving conditions relative to the prevention of dental diseases among the people. First, it began a study of tooth powders and pastes on the market with the idea of recommending those most suitable. In this connection we do not believe that all of the factors entering into the use of tooth powders or pastes in the different mouths have been sufficiently analyzed by the profession on the basis of laboratory and bacteriological experimentation, or the effects on the fluids and tissues of the mouth. This is something which should be scientifically made out and published, so that the profession and the manufacturers will be able to meet the situation in an intelligent and humanitarian way.

After looking into the various products on the market the Association decided to have a powder manufactured for itself from a formula which was to be published. Then a study was made of the proper form and size of tooth brush for the different surfaces of the teeth, and this resulted in several forms of brushes which more nearly fulfil the function for which they were intended than any we have seen.

The chief difficulty was to get chemists to manufacture the products up to standard grade and to keep them up. So far as the brushes were concerned no prominent firm seemed to care to undertake their manufacture. But the officers of the Association kept working away at the various problems till they finally mastered them. They insisted on chemists keeping their products up to formula specifications, and they finally got their brushes made. The demand has now become so great that the very firms which originally declined to manufacture them are clamoring for this privilege.

The Association has its products marketed to the people at a very reasonable figure and yet there is a small profit on every article that goes out, which comes to the Association. And here is the significant thing in the movement. Every dollar so earned is spent not for the profit of the members of the Association, but for educational and philanthropic purposes. Free public lectures on the importance and care of the teeth are given and the expenses paid by the Association. Pamphlets by the thousands are distributed to the public, charts and drawings are loaned to societies and to individual lecturers and a general campaign of education is carried on through various channels. Last, but not least, the Association plans to create a fund for the care of members of the profession who through old age or misfortune are incapacitated for work and are without the necessary means of support. We have never known of another organization quite like this in the dental profession and it will be interesting to study the outcome of the movement and to note how far reaching it may eventually become.

THE EDITOR'S DESK.

SOME OF THE SPICE OF PROFESSIONAL LIFE.

The practice of dentistry has sometimes been called drudgery, and there is no doubt of the hard work it entails, but if a man keeps his eyes open to the brighter things of life he can here and there extract a fair measure of fun from his experiences. The following letter was handed me by a practitioner in Chicago and it seems too good to keep. It was written by a minister of the gospel to his dentist, and we will let it speak for itself:

My Dear Doctor:

I got your letter just as I was going to leave Philadelphia. I shall leave for Pittsburg in a couple of days, to be there for a week or more. Will you send me a letter of introduction, please, to a dentist? I feel that I cannot wait any longer without danger to my teeth. I shall not be west until some time in the new year. I have mentioned your name to several dentists and you seem to be very widely known. You rank with the best in the United States, but that is not because of your skill; it is because you have me for a patient. If you had the least idea how men praise your work, you would swell up like a balloon.

Please send me the name of a dentist, and for heaven's sake don't send me to one that will charge me more than you do. I am not a member of the Standard Oil Co. Every time I leave your office I go into bankruptcy.

There are two reasons why I always remember you in my prayers. I pray that you may live, that you may take care of my teeth, but the great reason is I want "Billy" Sunday to get you down at the mourners' bench. You are not ready to die. Any man that takes the delight in using a hammer like you do needs to be converted.

Wouldn't your students enjoy seeing you down at the mourners' bench? Wouldn't you make a spectacle beating a drum for a Salvation Army? But that is your future if you repent. If you don't, you better have a suit of asbestos made to order.

Yours,

——— ————.

In another instance a patient who was having a gold plate made brought to his dentist the old plate which he had worn for years and told the dentist to do as he wished with it. The dentist said he would have it melted and credit the patient with the amount of gold. When the memorandum came in from the refiner the dentist enclosed it in a letter to the patient, as follows:

My Dear Mr. ————:

I have just had the remains of one of your best friends cremated, and as you will see from the enclosed memorandum from the refiner, the proceeds amount to $23.04. I wonder if you or I will bring that much when we are burned. I am crediting you with $23.00—I retain the four cents for commission.

Sincerely yours,

——— ————.

By return mail back came this answer:

My Dear Doctor:

Accept thanks for your favor. I did not dream that any part of my physical self would produce that amount of real money. This is certainly a case of where a part is greater than the whole, for I am sure that if the entire outfit were consigned to the melting pot, the product would not bring thirty cents. The only question is—haven't you retained a larger commission than you can well justify?

Again thanking you, I am

Very sincerely yours,

——— ————.

These things help. Sometimes a joke is more comforting than a dollar bill, and an appreciative letter more potent for happiness than a check. We must have the dollar and we must have the check, but if we can get them with a little pleasantry so much the better.

BOOK REVIEWS.

THE SURGERY OF ORAL DISEASES AND MALFORMATIONS. THEIR DIAGNOSIS AND TREATMENT. By GEORGE V. I. BROWN, D. D. S., M. D., Oral Surgeon to St. Mary's Hospital and to the Children's Free Hospital, Milwaukee; Professor of Oral Surgery, Southern Dental College, Atlanta, Ga. Octavo, 740 pages, with 359 engravings and 21 plates. Cloth, $6.00 net. Lea & Febiger, Publishers, Philadelphia and New York, 1912.

We commend this splendid volume to the consideration of those who are interested in this subject. There has not in the past been given sufficient study to this most important department of our work on the part of the profession, and we hope that Dr. Brown's book will prove a potent factor in directing closer attention to it. It is a large comprehensive volume covering a wide range of subjects, and is amply illustrated by excellent cuts and plates. Aside from a consideration of the various operations for hare-lip, cleft palate, etc., there are several illustrations showing transformations made in the facial contour of patients suffering from the effects of scalds and burns where the scar tissue had been removed and the parts restored to a more presentable appearance. The ingenuity of the modern surgeon is well illustrated in some of these operations, and when the fact is recognized that the physical appearance of an individual has much to do with his material prospects in life the beneficence of such operations can no longer be questioned. It will repay any one to read this book, and to those who are giving special attention to the subject it will be found indispensable.

WILD CLOVER. By JOHN MARTIN NEWKIRK, Pasadena, Cal. Cloth, 60 cents. On sale at Browne's Book Store, Fine Arts Building, and McClure's, Chicago.

This is a little book of poems and stories by the late Rev. John Martin Newkirk, son of Dr. Garrett Newkirk, formerly of Chicago, and now of Pasadena. This boy—we find it hard to think of him as anything but a boy—could not from his lovable nature have found it possible to write a poem or a story that was not good. The boo radiates the author and the author was one of the rarest souls w have ever known. We have read the book, every word of it, whic is saying more than we can say of most books we pick up these days and we hope to read it again. It will well repay reading by those who love the good and simple and pure in literature.

OBITUARY.

MR. WILLIAM H. GILBERT.

It is with profound regret that we announce the death in Philadelphia on March 16, 1912, after two weeks' illness from pneumonia, of Mr. Wm. H. Gilbert, president of the S. S. White Dental Mfg. Co. Mr. Gilbert was one of those sturdy, sterling characters who make for the stability not only of the particular concern with which they are connected but of the entire business interests of the community in which they live. Mr. Gilbert was born in 1847 and spent the greater part of his life in the employ of the S. S. White Company. After successive stages of advancement he was in 1891 made

WILLIAM H. GILBERT

general manager, and in 1906, following the death of the late Henry M. Lewis, he was promoted to the presidency, a position he filled with signal ability till the time of his death. He died practically in harness, and has left an impress not only on his immediate associates and those connected with the dental supply trade, but upon the business interests of the city in which he lived.

Mr. Gilbert is succeeded in the presidency of the company by Mr. Samuel S. White, Jr., son of the founder of the house.

PRACTICAL HINTS.

Edited by J. E. Schaeffer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, The Dental Review, 55 State Street, Chicago, Ill.)

A Simple Method for Holding Crowns While Polishing Them:—Take any piece of old modeling compound, warm and bring to a point, slip point into the crown, cool with cold water, proceed to polish. The heat produced in using rouge for the final polish will cause the crown to warm, allowing an easy removal.—*T. W. Russell, Minneapolis, Minn.*

Use for Cottonoid:—Most patients appreciate the protection given to the face where the rubber dam holders rest on the cheek, by the use of small pieces of cottonoid cut from the regular lengths of the cottonoid about two inches wide, thus making a piece about two by three and one-half inches to place under the holder next to the cheek.—*Grafton Munroe, Springfield, Ill.*

Protecting Metal Plates During Vulcanizing:—When a base plate of aluminum or Watts metal, cast or swaged, is used in plate work, it may become tarnished by the sulphur escaping in vulcanizing, making it difficult to regain the lustre. This may be avoided by painting the exposed metal surfaces with shellac or sandarac, which will protect the metal from the sulphur and greatly facilitate the polishing of the metal part.—*M. L. Schmitz, D. D. S., Chicago.*

Protecting Gum Margins:—To protect the gum margins around a root prepared for a cast Davis crown between sittings, I use a small piece of gutta-percha sufficiently warmed to make plastic. Thoroughly dry the root end and apply the gutta-percha partially, moulding it to place. To insure the permanency of this covering until the next sitting I use a very small sized tack. Warm it in the flame and imbed it through the gutta-percha into the root canal. Your temporary protection will stay until you remove it yourself—*A. E. DeRiemer, D. D. S., Chicago.*

Some Fallacies:—That "borax" causes teeth to crack is a mistake. Having soldered backing for sixty-seven years, taking no pains to prevent it from coming in contact with the teeth and making special effort to have it run down inside the holes, often in former years enlarging the hole, the cracking of a tooth almost unknown. Bending the pins does not cause the teeth to crack. Have been in the habit of doing this for many years and no teeth crack.—*L. P. Haskell, D. D. S., Chicago.*

Most Frequent Causes of Chronic Alveolar Abscesses:—(1) Dead pulps, (2) failures to lance acute alveolar abscesses sufficiently early, often permitting the pus to strip the periosteum from the bone and cause necrosis, (3) failures to properly cleanse or fill root canals, (4) holes drilled through roots, (5) infections through root canals as a result of the too common practice of treating root canals without the use of the rubber dam, and of allowing cases to go between treatments without absolutely tight sealing of dressings. —*A. D. Black, M. D., D. D. S., Chicago.*

Root Canal Infection:—The order of sequence is two-fold. Infection through caries, followed by an acute pulpitis, pericementitis, and a rapid suppurative process at first limited to the periapical tissues, and quickly extending to the surrounding tissues. Such a picture is usually produced by a more or less virulent staphylococcus. The organism is present in most cases where suppuration is marked. The ordinary symptoms produced by acute infection are present, and in keeping with the virulency of the organism. The pus finding its way through the alveolus comes in contact with the periosteum. It passes through this tissue and the overlying mucosa, in most instances, and quickly appears on the surface. The symptoms rapidly subside and the patient becomes comfortable.—*Frederick Moorehead, M. D., D. D. S., Chicago.*

To Obtain a Perfect Model:—One method: Soak your impression in water; run up model while impression is very wet; let stand until plaster is well set; soak again and separate immediately. My method: I make up my impression—plaster with water deeply dyed with carmine; then, after impression is taken, I immediately take a wet pledget of cotton in pliers and rub gently over entire surface of impression; then I wait a few minutes until the process of setting is complete and immerse in water a couple of minutes; blow out the surplus water from impression; run up model by first painting impression with my freshly prepared plaster and then pouring remainder; wait until plaster is thoroughly set and again immerse in water two or three minutes and separate while wet. I obtain better results than with any separating material.—*V. B. Newell, Stafford, Kan.*

Do Not Cause Unnecessary Pain:—A pulp can be killed without pain if you will only take the time. There is no excuse for sealing arsenic upon a pulp that is inflamed or has been aching severely, causing pressure in the sealing, or failure to use cocaine with the arsenical preparation; the pain and inflammation should be relieved first and the pulp should be left within the tooth until thoroughly devitalized, before attempting to remove it.

An essential oil sealed within the pulp chamber after the arsenic has been removed (and many times the arsenic is not left half long enough) for from one to two weeks will enable one to remove the pulp painlessly; you will have no hemorrhage and the canals will be in ideal condition to fill.

If just this one thing could be accomplished: removing pulps painlessly, dentistry would lose one of its greatest horrors, and thereby gain millions of new patients.—*W. E. Tennant, D. D. S., Fond du Lac, Wis.*

Diseases of the Antrum:—The diseases to which the maxillary sinus is subject, other than constitutional, are catarrhal, influenza, infections, suppurations, cysts and neoplasms. Suppuration is by far the most common and it may be acute or chronic, and is usually the consequence of a diseased tooth or of an infective rhinitis or ethmoiditis—though there are cases in which suppuration follows traumatism or is the result of a foreign body in the cavity. The symptoms in acute suppuration differ but slightly from the chronic—pain, tenderness, and swelling being more apparent in the former. The pain may be in the teeth, upper jaw, nose, or confined to the frontal region and radiate over the entire side of the head. Tenderness may be elicited by pressure over the canine fossa and the point of exit of the infra-orbital nerve. Close observation will occasionally show swelling over the buccal process of the affected side. A sense of fullness or weight, particularly in leaning over; frequently an odor and discharge of bloody pus or mucus through the nose, especially when the patient coughs or sneezes, or when they lie in a certain position. Lacrimation and photophobia are usually present, and congestion of the conjunctiva may be observed. Slight elevation of temperature co-exists. The use of the X-ray and the small electric mouth-lamp, while by no means positive, are valuable aids in making the diagnosis. Tapping the antrum with a trocar is permissible in doubtful cases.—*LeGrand M. Cox, M. D., D. D. S., St. Louis.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of $2.00 an inch.]

NORTH DAKOTA DENTAL ASSOCIATION.

This association will meet at Grand Forks, May 7 and 8, 1912.

IDAHO STATE BOARD OF DENTAL EXAMINERS.

The next meeting, for examination, of the Idaho State Dental Board will be held in Boise, Idaho beginning July 1, 1912, at 9:00 a. m., at the capitol building. Albert A. Jessup, D. D. S., Secretary.

ARKANSAS STATE DENTAL ASSOCIATION.

The next meeting of this association will be held in Little Rock, June 19, 20, 21, 1912. A good program is being prepared and a record attendance is expected. Irvin M. Sternberg Secretary.

IOWA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Iowa State Board of Dental Examiners for the examination of applicants for license will be held at Iowa City commencing Monday, June 3, 1912. J. A. West, Secretary, 417 Utica Bldg., Des Moines, Iowa.

AMERICAN SOCIETY OF ORTHODONTISTS.

The twelfth annual meeting of the American Society of Orthodontists will be held in Chicago, Ill., on Monday, Tuesday and Wednesday, July 1, 2 and 3, 1912. Frederick C. Kemple, Secretary, 576 Fifth avenue, New York City.

ALUMNI ASSOCIATION OF THE CHICAGO COLLEGE OF DENTAL SURGERY.

The annual meeting and clinic of the Alumni association of the Chicago College of Dental Surgery will be held in the college building on Monday and Tuesday, June 3 and 4, 1912. This meeting is to be a home coming for all the graduates of the college, as well as for all ethical practitioners. Mark off the dates now and plan to come. H. C. Peisch, Secretary.

INSTITUTE OF DENTAL PEDAGOGICS.

At the last meeting of the Institute of Dental Pedagogics the executive board decided to hold the next annual meeting in Pittsburgh, January 28, 29 and 30, 1913. The following officers were eleced for the ensuing year: President, Dr. H. Edmund Friesell, 1206 Highland Bldg., Pittsburgh, Pa.; vice-president, Dr. D. H. Squire, Buffalo, N. Y.; secretary-treasurer Dr. Fred W. Gethro, 917 Marshall Field Bldg., Chicago, Ill.

NEBRASKA STATE DENTAL SOCIETY.

The thirty-sixth annual meeting of the Nebraska State Dental Society will be held in Lincoln, May 21, 22, 23, 1912. Lindell Hotel as headquarters and the clinics in the Auditorium. We are looking forward to the best meeting in our history. The following men from out of the state will appear on the program: Dr. C. M. McCauly, Abilene, Texas, a paper and clinic on Amalgam. Dr. C. G. Myers, Cleveland, Ohio, "High Pressure Anaesthesia." Dr. Chas. Woodbury, Council Bluffs, Ia. paper on "Indications for Gold Inlay and for the Foil Filling." Dr. Horace Warran, Missouri Valley, Iowa, will conduct a campaign for the public on Oral Hygiene. All ethical practitioners are invited to attend the meeting. J. H. Wallace, Secretary, Omaha.

THE CLINIC OF THE NATIONAL DENTAL ASSOCIATION.

The clinic committee desires to extend to all members in good standing of all dental societies a cordial invitation to attend and to clinic at the all-day clinic of this association to be held at the New Willard Hotel, Washington, D. C., Friday, Sept. 13. The enormous ball room, top floor of this hotel, has been secured and the management promises us every convenience. We wish particularly to call your attention to the classification of the different clinical material, where every effort will be made to arrange the different events according to title and in sequence so that the various "steps" in the operation may be seen at a glance, without the usual regard to chair or table, this will avoid confusion and save time, allowing the members to select and study favorite subjects without hunting all over the room. From the material now in hand your committee can promise a large and varied clinic; that we may assemble all clinician's names and titles for the preliminary program, kindly reply at once to C. J. Grieves, chairman, Park Avenue and Madison street, Baltimore, Md.; A. O. Ross, vice chairman, 807 N. High street, Columbus, O.; S. W. Bowles, secretary, 1616 I Avenue, Washington, D. C.; W. R. Clack, Mason City, Ia.; A. P. Burkhart, Auburn, N. Y.; J. T. McClenehan, Washington, D. C.; W. D. Tracy, New York City; George E. Savage, Worcester, Mass.; John H. McClure, Wheeling, W. Va.; J. E. Chace, Ocala, Fla.; E. L. Pettibone, Cleveland, Ohio; H. J. Allen, Washington, D. C.; W. R.

Wright, Jackson, Miss.; C. A. Lundy, Los Angeles, Cal.; S. H. McAfee, New Orleans, La.; C. M. Barnwell, Atlanta, Ga.; Richard L. Simpson, Richmond, Va.; W. H. Scherer, Houston, Texas.

PANAMA PACIFIC DENTAL CONGRESS.

The first meeting of the Committee on Organization of the Panama Pacific Dental Congress, which will be held in San Francisco in 1915, took place in San Francisco on the morning of March 14th, with delegates from practically all the Pacific Coast states present. The project was entered into with zest and enthusiasm and promises of fullest and widest support were made by all the delegates. Permanent officers of the committee were elected as follows: Chairman, Dr. Frank L. Platt; secretary, Dr. Arthur M. Flood; treasurer, Dr. W. A. L. Knowles. The Board of Directors will eventually consist of fifteen members. Eight were elected at this meeting, consisting of the chairman, secretary and treasurer of the committee and five others from the Bay counties, viz: Drs. H. G. Chappel, J. Loran Pease of Oakland, Dr. F. G. Baird of San Francisco, Dr. R. B. Giffen of Sacramento and Dr. A. M. Barker of San Jose. The remainder of the fifteen to consist of one from each state participating and one from Southern California, each electing its own director. It was voted by the delegates that the Board of Directors incorporate, as a matter of business sense and expediency. The enthusiasm which prevailed at this meeting promises well for the successful fulfillment of this great project. As soon as incorporation has been affected, arrangements will be made for enlisting the co-operation and support of every organized society in the world. Arthur M. Flood, Secretary.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The semi-annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois will be held at the Northwestern University Dental School, corner Lake and Dearborn streets, Chicago, Beginning Thursday, June 13th, 1912, at 9 a. m. "The following preliminary qualifications shall be required of candidates to entitle them to examination by this board for a license to practice dentistry in the State of Illinois: Graduates of a reputable dental or medical school or college, or dental department of a reputable university, who enter the school or college as freshmen on or after the school year 1906-7, must have a minimum preliminary education of not less than graduation from an accredited high school or a certificate from the state superintendent of public instruction, equivalent officer or deputy, acting within his proper or legal jurisdiction, showing that the applicant had an education equal to that obtained in an accredited high school; which certificate shall be accepted in lieu of a high school diploma." Candidates will be furnished with proper blanks and such other information as is necessary, on application to the secretary. All applications, together with the fees, twenty-six dollars ($26.00) must be filed with the secretary at least five (5) days prior to date of examination. The examination fee is twenty dollars ($20.00), license fee five dollars ($5.00), registration fee one dollar ($1.00). Address all communications to T. A. Broadbent, Secretary, 705 Venetian Building.

AMERICAN MILLER MEMORIAL.

To the Dental Profession of America:

The committee appointed at the December, '09, meeting of the Ohio State Dental Society, to raise funds to establish an American Memorial to perpetuate the memory of the late Dr. W. D. Miller, have through the co-operation of the Honorary Committee of the several states collected funds amounting to $3,812.50, with an additional $450.00, subscribed but not paid in at this writing. The amount asked for from the several states was pro-rated according to the membership of the state societies, several states have over subscribed the amount called for, others partially, while ten have failed to subscribe anything. The proposed memorial will be a monument to consist of a life-size bronze of Dr. Miller mounted upon a granite base, with appropriate tablets, the cost of which will approximate $8,000, and be a lasting credit to the profession. It is the desire of the committee to have a tablet stating that funds were received from representatives of the dental profession in every state of the union, and to this end we are soliciting funds, whether they be personal or society contributions. Ohio, Dr. Miller's native state, has contributed $1,400 to the fund, which amount, through personal subscriptions and component societies will be increased to about $2,000. We are asking for a favorable consideration of the matter by the various state societies during the coming meetings, and hope the wide spread appreciation of Dr. Miller's work for our profession will enable our committee to take steps toward the construction of this tribute to his memory at an early date. Dr. Weston A. Price, 10406 Euclid Avenue, Cleveland, Ohio, has been selected treasurer of the fund, and to him all subscriptions should be made payable. Yours very truly. Edward C. Mills, Chairman, 151 E. Broad Street, Columbus, Ohio; J. R. Callahan, 25 Garfield Place, Cincinnati, O.; S. D. Ruggles, Portsmouth, Ohio.

ALABAMA BOARD DENTAL EXAMINERS.

Alabama Board Dental Examiners meets in Tuscaloosa, Ala., on Monday, June 10th, 1912, 9 a. m. Requirements—Applicants for license must hold a diploma from a reputable dental college and stand a written examination on the branches taught in reputable dental colleges and do practical work in operative dentistry and in prosthetic dentistry, construct an anterior bridge of six teeth, using Richmond crowns as abutments, soldering to be done in the presence of one or more members of the Board. No temporary licenses issued. Examination fee, $10.00 in advance. For further information send stamp and address. W. E. Proctor, Secretary.

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NEWER METHODS IN CROWN AND BRIDGEWORK.*

BY HART J. GOSLEE, B. S., D. D. S., CHICAGO.

The full extent to which the application of the casting process may have revolutionized the practice of dentistry is, of course, difficult to determine, but it is safe to say that its influence has been and is now being felt to a greater or less degree by even the most obscure dentists in the most remote districts.

Whether all who are now doing casting in some form or other are familiar with or will concede its revolutionary influence, and the marked advancement made possible by its application, or not, may be a question; but that at least a very large percentage of dentists are doing casting, and that they are doing better work, and doing it with infinitely greater comfort to their patients and with the expenditure of less nervous energy on their own part than they formerly did, there can be no question. That some operators are much more enthusiastic over its possibilities than others, and that some are getting much better results than others is also unquestionable, and is as interesting as it is true.

This, however, is but a natural sequence and should be expected in any field of effort in which former accepted practices and methods of long standing become so completely revolutionized—supplemented, if you please—in so short a period of time; where the pedestals upon which the cherished reputations of so many prominent practitioners were built have been made to crumble and totter almost in a day; where old and young must begin anew and alike, and where the application of this newer mode of procedure and its practicability must necessarily be tinctured with a saturated solution of personal equation.

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*Read before the Chicago Dental Society and the Illinois State Dental Society, 1912.

From the beginning, however, it has been interesting to note that those who were early to grasp the possibilities of casting and, hence, who have been and are still doing the most of it, are the most enthusiastic over it, and, therefore, does it not naturally follow, by the same rule of thumbs, that those who were first to grasp and accept its wonderful possibilities, who have been and are still doing the most of it, and who are most enthusiastic over it, are also the ones who are obtaining the best results?

While it may be true that the proportion of those who ever attain to the very highest achievements in any mechanical pursuit is not a large one, still I am of the very firm belief that the casting process has afforded an opportunity for raising the standard, and increasing the percentage of uniformly good results; and, in the light of our present achievements, that this standard will become higher and higher in proportion as we recognize our own personal limitations, and realize the full scope of the possibilities of this process.

All who are sufficiently honest with themselves as to analyze and recognize their own limitations will not expect a mechanical process, or a machine of any make or kind, to adjust and adapt itself to the varying and intricate demands of an exacting line of work, unless the process is followed, or the machine operated, with an average degree of human intelligence, and those who fail to recognize this are surely destined to meet with failure.

Thus it is more than probable that many may have failed in attaining to the heights of even average success simply because they *expected* too much of the process involved, and *exacted* too little of themselves, but those in this class never become enthusiasts, and those who never become enthusiasts never become experts, in any line.

Enthusiasm, expertness and all that goes with it, make for, and insure, *success* in the application of any mechanical process can, after all, come only from the "man behind the gun," and hence the operator who aspires to such must be willing to acknowledge and contribute his share. And in this instance his share is in the form of ammunition, and the ammunition now needed most of all is *correct and accurate technique.*

While the factor of personal equation will perhaps necessarily demand a more or less different technique for each and every operator, yet with each the most scrupulous attention to details and the utmost of accuracy is necessary; and as such a technique is to be acquired only at the expense of time, thought and energy, it is scarcely purchasable, nor may it result from delegating important parts of the work to laboratories, or to inexperienced or unskilled assistants, as is a common practice.

When the average operator realizes these essentials to success, then the average operator may reasonably hope to rise above the average, and to achieve success in the application of the casting process, and as he appreciates them will he also find the field of usefulness broaden, and the possibilities become more and more unlimited.

If there were, however, no field to which the casting process may be applied other than the one which embraces the filling of teeth, let me ask you what a long-felt want would it still supply; what a broad field of usefulness would it occupy; and what a priceless advancement would it mark in the preservation and restoration of the teeth, since it is now generally conceded that the inlay affords a better, quicker, less painful, and probably, on the average, more permanent character of operation?

Granting all of this to be true, however, the limitations of this process have by no means yet been reached. Indeed, it seems that it is still only in its infancy, and that the field of its usefulness as applied to all other phases of practical dentistry is as broad and far-reaching as is the degree and character of success already insured in the filling of teeth.

While this is undoubtedly true, to a greater or less extent, as applied to the whole field of dental prosthesis, it is particularly true as applied especially to the subject of crown and bridgework.

But a few—a very few—years ago this line of our work, which many of us are now pleased to designate and dignify as a "specialty" was but an indeterminable mass of empirical details. Almost every dentist had his own ideas, and his own methods, and each differed from the other to such an extent as to confuse the teacher, and bewilder the beginner, in every respect and direction except one—the display of gold.

For many years patients wearing crown or bridgework, however limited or extensive in character, were involuntary advertising mediums for dental jewelers; were forced to display shocking evidences of a handicraft which, while useful, perhaps, was usually far short of art, and always more or less repulsive.

These evidences, I am sorry to say, may still be observed, but fortunately not to the same extent. As a profession, we are beginning to strive for higher ideals in the artistic phase of our work, and in this respect we are aided materially by the demands of an ever-increasing degree of culture on the part of our patients.

Since porcelain has always been and is still the one substance which most closely simulates nature, and therefore best meets the requirements, the combined esthetic ambitions on the part of the dentist and esthetic demands on the part of the patient, must lead one to conclude that in an effort to satisfy each *more porcelain* and *less gold* must be used.

While this was recognized many years ago, still the inherent element of structural weakness so characteristic of porcelain, and so often learned from sad experiences, together with the knowledge that cosmetics was but one requirement, and that in the construction of all forms of crowns and bridges the actual mechanical requirements of strength and accuracy of adaptation must necessarily receive first consideration, it is no great wonder that cosmetics was accordingly sacrificed.

If it were not, and if it is not, possible to obtain both of these requirements at one and the same time, then cosmetics should be placed second to, or sacrificed for the purely mechanical, but the possibilities of casting offer opportunity for obtaining all of the combined requirements to the very highest degree, and hence its application may be made to practically revolutionize all of our former methods.

This is possible because the casting process, *skilfully utilized,* insures, first, accuracy of adaptation, and, second, a maximum of strength with a minimum of gold; and in proportion as the amount of gold necessary to insure strength may be decreased, the amount of porcelain may be increased. Thus, if our work be properly constructed, less gold and more porcelain may be safely and successfully used, and the suggestions which I have to offer you along these lines are based entirely upon the theme of more porcelain and less gold, with equal and adequate strength.

Such manifestly desirable advantages are now to be obtained by means of a more general use of all-porcelain teeth instead of the ordinary thin facings, combined with a skilful application of the casting process.

You will probably agree with me that this type of tooth is preferable for single artificial crowns, because it affords better form, better color and greater strength than are possible to obtain from the use of facings. Also that an all-porcelain tooth is better for bridgework because the presence of an occlusal surface of porcelain instead of gold, on any or all of the posterior teeth, is advantageous not only for cosmetic and hygienic reasons, but for *actual masticatory purposes* as well.

These advantages are so evident that the more esthetic operator has been forced to look and hope for some form of tooth, and some method of application which would eliminate the inherent weakness of thin facings, and the objectionable features incident to their use.

To overcome the shortcomings of the so-called "Richmond" crown and of the ordinary bicuspid and molar dummy with porcelain facing and gold cusps, the advantages of some form of interchangeable or replaceable all-porcelain tooth, more closely simulating the form and color of the natural teeth, were early recognized. As a result of this recognition, many types have been introduced, but until very recently most of them have been of the thin facing variety, and applicable to the anterior teeth only.

While the all-porcelain tooth, such as the Davis, Logan and Justi crowns, has always been recognized as being the nearest approach to an ideal substitute for the natural teeth, yet they were not originally designed to meet the present requirements of crown and bridgework, and hence their use has been confined to that class of cases where more or less temporary results were all that was expected or demanded.

If the esthetic and hygienic advantages possessed by this type of tooth, however, could be combined with those of exact adaptation, and uniform and adequate strength, and if to these might be added the further advantages of being cemented to the basic structure instead of soldered, and of being replaceable and more or less interchangeable, it is evident that our efforts would be a nearer approach to the ideal.

In my opinion, which has been often expressed, the attachment of porcelain teeth or even facings to the metal structure by means of soldering, or of *direct* casting, is wrong. It is a wrong principle because the porcelain is subjected to a degree of heat which must endanger its structural integrity and influence the preservation of its color; because the tooth or facing is thus attached in a stiff and rigid manner, and, being friable, is more likely to fracture under the stress of mastication; and because, in the event of accident, no favorable opportunity for repair or replacement is usually afforded.

I think you will also agree with me, therefore, in that the elimination of these objectionable features must necessarily constitute an improvement, and that such an improvement is to be obtained by the use of replaceable teeth attached to the supporting metal structure only by means of cementation.

An experience of many years has proved that this means of attachment is reliable in proportion as the adaptation of the metal to the porcelain may be close and accurate, or, in other words, in proportion as the porcelain may be "boxed up," protected and supported. It is stronger when so attached because it is not subjected to any degree of heat, and is not held so rigidly, due to the more or less cushion-like effect afforded by the adhesion of cement over the entire surface of the porcelain; and because, not being held so rigidly, it is less likely to become fractured. Furthermore, the color is never changed; those dark blue marginal outlines so invariably present and due to the penetration of saliva between backing and facing are absent, and opportunity and facility for replacement in the event of accident always present.

As I have previously stated, these possibilities and advantages are to be adequately obtained only in some form or type of tooth which presents as much porcelain as possible, this porcelain not being weakened by the presence of metal pins nor by the provisions for retention, and which, therefore, possesses a maximum of strength; which is of natural form, more or less universally applicable, and which will need but a minimum of grinding for effecting the desired and required adaptation.

This latter feature, as applied to the basal or retentive surface, is essential, because in proportion as a given form of porcelain tooth will require but little or no grinding upon this surface in effecting its adaptation to the requirements of the individual case, may it be expected to be replaceable or interchangeable.

These combined advantages, I believe, are to be obtained in a form of tooth suggested by your essayist, and now known as the "Goslee Interchangeable Crown and Bridge Tooth."

It will be observed that these teeth as now made are of natural form; that they possess the splendid strength and color characteristic of the Consolidated tooth bodies; that they are adapted to single crown work where any form of metal base is used, as well as to intermediate teeth, or "dummies" for bridgework; that they afford a minimum display of gold and require but a minimum amount of grinding, and that with a sufficiently large variety of molds they should be almost universally applicable; also that they are strongest where the greatest strength is required; and that they offer ample opportunity for secure retention to the supporting base or structure.

A further advantage made possible by the use of replaceable or interchangeable teeth, which applies particularly to especially difficult cases, is to be obtained by making duplicates, and while it is true that any form of interchangeable tooth is far less likely to become broken from the stress of mastication, yet the making of duplicates coincidentally with the initial construction requires but little time, is always a source of inestimable protection to the particular patient, and affords unlimited relief and satisfaction to the dentist. It is therefore a safeguard which might be observed often and profitably by everyone whose necessarily small fees do not render it prohibitive.

In all instances, however, whether duplicates are made or not, the color number and mold number of each tooth used in every case should be recorded on the card or ledger sheet, and thus made a permanent part of the record. Because of these advantages and for these various reasons I firmly believe that only some form of interchangeable tooth should ever be used in single crowns, or in "fixed" bridgework, of any type, if the best results and highest possibilities are to be attained in our efforts.

METHODS OF APPLICATION AND PROCEDURE.

In addition to such desirable improvements as may be achieved by the use of teeth of this character, the introduction and application of the casting process has placed this field of our effort upon a more systematic and practical basis, as an evidence of which permit me to call your attention to the methods which I am now generally employing, almost to the complete exclusion of all other and former procedures, and which I am pleased to consider under the caption of "Newer Methods."

SINGLE CROWNS.

For the ten or twelve anterior teeth, or all teeth within the range of vision, where porcelain is demanded, the all-porcelain replaceable or interchangeable crown, *with cast base*, and with or without a band, as the requirements may indicate, is used in a very large percentage of cases. It is undoubtedly the strongest, most artistic, and most universally applicable type of substitute for the natural tooth, and in all respects is second only to a skilfully adapted "jacket" crown. Indeed, for the average dentist it is better and more quickly and easily made; and, moreover, it possesses an advantage over the latter in that immediate replacement in the event of mishap is possible.

PORCELAIN CROWNS WITH CAST BASE.

In the construction of all forms of porcelain crowns with cast bases much difficulty has heretofore been and is now being encountered in molding the wax to a close adaptation to both the root-end, *particularly at the periphery,* and the base of the crown, and at the same time have it hold the dowel or dowels in the proper position to insure correct alignment.

These essential features are usually so uncertain and in some instances so difficult and so unsatisfactory as to have caused me to devise and suggest a technique which eliminates any such uncertainty, which insures accuracy, which is applicable alike to all cases, whether a band is required or not, which makes the fitting of a crown to the most difficult root as simple as to the easy one, which relieves the patient of any discomfort whatever, and which, when used in connection with the Goslee tooth, has proven the most satisfactory method of crown construction I have ever followed.

In the various methods now generally used and advocated,—and each operator has his own—good, accurate, reliable results are difficult to obtain because the very plasticity of wax of any kind makes it possess a tendency to *spread* when subjected to the pressure necessary to mold it to a clean, close adaptation.

This inherent tendency has made it practically impossible for me to obtain a sufficient degree of accuracy of adaptation to the root-end with any wax, but may be entirely overcome, and absolute accuracy obtained in all cases by first adapting a cap of thin pure gold, or platinum, to the root-end. If this is carefully done, the surface thus obtained will always be a closer fit to the root than can possibly result from the molding of wax alone, with any investment material now procurable, and this surface will require no finishing whatever after casting.

Also, such a procedure reduces to a minimum the possibility of any change of form which may result from the warpage or shrinkage of the gold or alloy used in casting, which is a very important consideration. While the adaptation of the cap may be effected by burnishing directly to the root, the best, most accurate and least painful results are always to be obtained by *swaging.* This necessarily involves the impression and die, or indirect, method.

TECHNIQUE.

The technique involved, in sequential order, is as follows:

FIRST: Prepare the root in the usual manner, as for any type of porcelain dowel crown. If a full or partial band is desired, all enamel should, of course, be removed.

SECOND: Adapt a base of thin pure gold (about 38 gauge) to the root-end, by swaging or burnishing. Platinum may be used if desired, but pure gold is more easily adapted by either method.

THIRD: This adaptation is to be best accomplished by taking an impression of the root-end in modeling compound, investing it in plaster, and making a die of quick-setting amalgam or cement. An amalgam die is better than cement, because of being much more definite and reliable, though it requires more time. When the die has been obtained it should be trimmed around the periphery with a fissure bur until the root-end is freely exposed.

FOURTH: When so trimmed mount the die in the ring of any of the swaging outfits, with modeling compound, and with the soft rubber plunger swage a cap of 38 gauge pure gold.

Where the basal end of the root is smooth and flat, and no band at all is desired, the cap may be successfully adapted by burnishing directly to the root-end, but where a full band or any portion of a band is deemed advantageous or necessary, or where the surface of the root is concaved or irregular, the adaptation is to be best obtained by swaging.

The use of a cap previously adapted by either burnishing or swaging, is advantageous, not only because it overcomes warpage and shrinkage, and insures a better fit of the finished crown to the root, but because it also facilitates sustaining the proper relation between the root, the dowel and the crown.

FIFTH: The next step is to select a tooth of suitable size and proper color. The selection of the tooth for the case at hand is best made by having a tray of sample moulds, and when one of proper size and form has been selected simply record the formula. Thus, for example, the record slip would read, "Upper Right Lateral, Mould 51, Color 65." If care is exercised in selecting just exactly the proper size and shape, practically no grinding whatever will be required.

In this connection, it would be better to select a formula just a trifle too small than one too large. If the exact size is not obtainable, small additions in length or width may be easily made in one bake, using any of the lower fusing bodies. Such additions are better than selecting a tooth which is too large and having to grind it, and little or no grinding should be resorted to, as these teeth are replaceable or interchangeable only in proportion as they may be used without grinding.

The formula of each and every tooth selected and used should always be permanently recorded in the ledger or card system for future reference, and in the event of necessity for replacement.

In the absence of sample moulds, an impression should be taken in wax or modeling compound, and a model made in plaster-of-Paris. The selection may then be made upon this model, but greater accuracy is to be obtained in the use of sample moulds directly in the mouth.

SIXTH: When the tooth has been selected, the canal should be enlarged to receive the dowel, which should be of a length which will enter the root to a sufficient depth and then engage and hold the tooth in its exact relation to the root. In single-rooted teeth a slight enlarging of the canal, or slight bending of the dowel, or both, will usually sustain the tooth in its proper alignment, and in upper first bicuspids one dowel is usually all that will be required, but this should be placed in the *buccal* canal.

Iridio-platinum or clasp-metal dowels should always be used for cast work, and should be round and not smaller than 14 gauge, though the end entering the canal may be *tapered* to conform to the size of the root.

SEVENTH: When the dowel and tooth have been thus adjusted, the thin cap of pure gold should then be placed in position on the root, perforated to receive the dowel, and the latter, in position in the crown, forced to place. The tooth should then be removed and the relation between cap and dowel sustained with wax or temporary stopping. The two should then be removed from the root and invested with a very small bit of soldering investment material. When this is hard, the dowel should be tacked to the cap with a small bit of 22 karat solder, which will insure their permanent relation. Cap and dowel should then be adjusted to position on the root and trimmed and burnished to the desired accuracy of adaptation.

EIGHTH: The crown should then be ground to a close joint along the labial or buccal edge, and all other requirements of adaptation completed. When these have been observed the base of the crown should be painted with glycerine or thin oil, a small piece of soft clean wax placed on the cap, and the crown then forced to its exact position in relation to the cap. Crown, dowel and cap may now be removed from the root and the space between the gold cap and porcelain tooth completely filled with melted casting wax, preferably of a hard character. When thus filled and contoured all surplus wax should be nicely trimmed away, and the porcelain crown then carefully detached, which is made possible and easy by the presence of the lubricating oil.

No. 30 gold foil placed in direct contact with the porcelain tooth just before adjusting the crown to position on the cap may be used as a means of facilitating the removal of the crown from its base, instead of a lubricant, with good results.

When the porcelain crown has been loosened from the base, but before it has been removed, the sprue-former should be *securely* attached to the thickest part of the wax. The crown may then be removed, the base invested and cast, always using a good grade of about 22 karat gold for the casting.

By a "good grade" of gold I mean that all gold used for this purpose should be at least 22 karat, and clean and free from contaminating metals and alloys. This will require that all scrap used must be previously melted and refined before attempting to cast it, if good results are to follow.

When the casting has been made, it should be cleaned in acid and finished. If duplicates are to be made, a crown of the same mould and color should now be ground to fit the cap. The original should then be cemented to the base and the crown polished.

NINTH: Whenever it is absolutely impossible to have a single dowel fit the canal, and at the same time support the crown in proper position, the surplus end projecting through the cap should be cut off close to the cap, leaving just a sufficient length to insure strength. A separate short dowel such as is made for dummies for bridgework may then be used to support the crown, and should be placed in position in the crown, any unnecessary surplus cut off to permit of proper alignment, the porcelain then lubricated, and the relation sustained in wax, as previously indicated, where a single dowel is used. This is always better than to attempt to mold wax and cast the sustaining post as a part of the cap.

TENTH: In cases where the space between the cap and the base of the crown is very small, or where it may not be convenient or seem necessary to cast the base, good results may be obtained with solder.

In such cases the porcelain tooth should be backed up with 38 gauge pure gold by burnishing or swaging; the crown and backing then placed in position in relation to the cap, the porcelain removed, the case invested, and the space between cap and backing then filled with 22 or 20 karat solder.

This method is particularly useful in very short bicuspids, but where there is sufficient space to permit of casting, the results are perhaps more uniformly strong.

* * *

This entire process reduces crown construction to a definite system, and one which requires but little time, which is simple, which insures a more or less perfectly adapted base, obtained without the slightest discomfort to the patient. If a full or even partial band is desired this latter feature is not possible when *burnishing* directly to the root-end is attempted.

For single crowns a slight lingual and proximal band is usually all that will be required. This strengthens the attachment between crown and root, and precludes the possibility of subsequent fracture of the root—for which purpose a band is usually used, but in all cases where the crown is to be used as a bridge abutment a *full* band should remain.

The construction of a crown by this method usually involves but three short sittings, and the best results are to be obtained by doing all the work directly in the mouth. At the first sitting the root is prepared, the root impression taken, the mould number and color selected, and a temporary crown mounted. This latter feature is desirable as a means of packing the soft tissues away to afford and insure a free exposure of the root-end at the next sitting, as well as to relieve the patient of the temporary embarrassment. The amalgam die having been made and the pure gold disc swaged and tooth selected *in the meantime,* at the second sitting the cap is fitted to the root, the dowel and tooth adjusted to the requirements, the dowel then soldered to the cap, and the relation between the tooth and cap secured with casting wax. The crown is then cast, the tooth cemented to place and finished, and the final mounting is made at the third sitting.

* * *

GOLD CROWNS.

For second and third molars—and even first molars, when the presence of gold is not objectionable—the cast gold crown affords results far in advance of anything heretofore obtained. In the construction of gold crowns by the casting process, however, the fit or peripheral adaptation is, because of the spreading tendency of wax, *always best obtained* by previously fitting some form of band to the root and then casting directly to it.

Whenever it is desirable to exaggerate the contour, a narrow band of platinum or 22 karat gold, of about 30 or 32 gauge, should first be made to fit snugly around the entire periphery and then trimmed to evenly approximate the end of the root, after which all of the contouring may be done in wax, which can be best done, perhaps, on a model.

When an exaggerated contour is not required, however, and it seldom is, the band may be made of 28 gauge, 22 karat gold, and fitted and contoured in the usual manner. When in position on the root, casting wax is then moulded to the end of the root inside of the band, and this procedure followed by an imprint in the wax of the opposing teeth in all of the movements of mastication.

After the band has been removed, its interior should be filled at once with casting investment material, and the occlusal surface properly carved, after which it may be invested and cast, using for the casting the same grade of gold of which the band was made.

If the band is thoroughly clean before investing, and the gold to be cast is of good quality and highly fused before casting, a good physical union will usually result, but if it does not, a small bit of 22 karat solder placed inside at the immediate joint will insure the same.

A thin disc of platinum foil placed inside of the band and over the end of the root just previous to moulding the wax will insure a smoother surface, and therefore a better seating of the finished crown after casting, than is to be obtained from investment material alone.

Where an exaggerated contour is desired, the best results are probably to be obtained by first closely fitting a platinum band, about 32 gauge, to the root, trimming this even with its occlusal plane, and then soldering a top to it, thus completely boxing up the end of the root with a close-fitting platinum cap. An impression and bite may then be taken, and when the models are obtained, all of the form and contour desired may be made with wax, and the casting made directly to the platinum cap.

These two general types of porcelain and gold crowns will meet the requirements of single crown work in a very large majority of cases, and the results are far more accurate than are to be obtained by any of our former methods.

* * *

FIXED BRIDGEWORK.

In fixed bridgework, which constitutes an assemblage of attachments and intermediate dummies, our work may also be simplified, because three general types of attachments and three general types of dummies will be found to meet the requirements in an exceedingly large percentage of cases.

ATTACHMENTS: The methods of obtaining attachment to the supporting teeth or roots embrace the *porcelain replaceable crown* with dowel and *cast base,* the construction of which has just been referred to, as applied to the roots of anterior teeth, or when it is impossible or inadvisable to preserve the natural crown; the *inlay,* when the attachment is to be made to the *crown* of a natural tooth, which is good practice when the remaining natural crown is sufficiently strong; and the *gold crown* for the molar teeth when the use of an inlay is for any reason not indicated.

As previously emphasized, wherever a dowel crown is to serve as an attachment for bridgework, a narrow band should always be used. In my opinion, this is absolutely essential because of the additional strain to which the root is to be subjected, and as a means of insuring permanency and precluding fracture.

When an inlay is to serve as an attachment, the cavity preparation is, of course, exceedingly important, and some form of post or posts should always be used to insure stability and as a provision against the inlay becoming loosened by the strain and possible torsion to which it is to be subjected.

The general applicability of the inlay as an attachment for bridgework has been a subject of considerable discussion ever since casting became an accepted practice. That it will serve the purpose as well as, and in some respects even better than, a full crown there can be no doubt, providing its adaptation and stability are insured.

The former depends, first, upon adequate and proper cavity preparation, and then careful technique in making the inlay; and the latter depends upon the use of a proper alloy in casting, and upon pins or posts of some form, for the reasons mentioned.

Wherever the walls of the supporting tooth are sufficiently strong to insure permanency; whenever a suitable cavity may be properly prepared, the inlay, well-seated and securely anchored, and made of a hard alloy, such as five per cent. platinum in pure gold, coin gold, or 22 karat gold, I am of the impression that such an attachment is often better than a full crown because of the absence of possibility of gingival irritation, such as is so often present where the latter is used.

The cavity preparation for such inlays does not differ essentially from that for a simple filling, excepting that its buccal, lingual and cervical margins must be so extended as to carry the margin between tooth and filling beyond any actual contact of the artificial tooth to be supported by it, in order that each and all of these margins may be exposed, for hygienic reasons.

"DUMMIES:" As dummies for fixed bridgework, three general types will answer the requirements in all cases.

The all-porcelain replaceable crown and bridge tooth with cast backing is adapted to all positions in the arch where the conditions of absorption and occlusion will permit their use, and is undoubtedly the ideal form of artificial substitute. Backings for these teeth should usually be cast separately, though they may be made in sections involving the number of dummies between the attachments, which should never exceed three, or possibly four. Better form, larger and therefore more hygienic interproximal spaces, and less display of gold, however, are to be obtained by making each backing separately.

As a means of preserving the proper relation of the short sustaining post which holds the tooth to the backing, and of insuring a smoother surface adaptation of the backing to the porcelain than the ordinary casting investment materials afford, in using this type of "dummy" a thin backing of about 38 gauge, pure gold should be previously swaged to the tooth, and the post soldered to it. It is then always necessary to allow as much surplus end of post as possible extend beyond, in order to insure strength in the final attachment of this essential part to the completed backing.

Casting wax may then be moulded to the required form, and the casting made directly upon and against the thin gold backing, by which method any distortion or possible misfit due to shrinkage or warpage is overcome, as previously mentioned, and the most finished, accurate and reliable results are insured.

In the use of this type of tooth in all cases in the upper arch where complete absorption has already taken place, the most sanitary form of structure is usually to be obtained by moulding the wax so as to restore or approximately follow the lingual form of the tooth, but tapering down to a narrow saddle at the point of contact with the soft tissue. As a rule, and contrary to the opinions of some, however, wherever the adaptation is good, such a type of construction will be found to be far more sanitary than the usual recesses, shelves and pockets so common in the ordinary methods.

In the formation of this type of saddle, the desired results may be best obtained by first burnishing the same thickness of pure gold to the model, between the finished abutments in position thereon, and then trimming it to conform to the size of the necks of the teeth to be supported by it. The general form of the structure may then be made by filling in between this saddle and the backings with wax, after which the piece may be invested and cast. Or in instances where this space is *exceedingly small* it may be filled with solder.

In this more or less typical fixture it will be observed that practically no gold is displayed anterior to the second molar, and yet that a maximum of strength presents throughout.

In cases where complete absorption has not occurred, a saddle is, of course, contraindicated, but in these cases the neck of the porcelain tooth should accurately fit and bear *firmly* upon the soft tissue, and the lingual surface of the backing should then be so formed as to be as nearly convex or self-cleansing as possible.

TECHNIQUE.

FIRST: In the application of the Goslee tooth to the construction of fixed bridgework, all of the crowns or inlays which are to be used in the support of the fixture should first be made separately.

SECOND: These should then be placed in position on the supporting roots, or teeth, and an occluding "bite" taken in wax. When this has been obtained, an impression—always in plaster—should follow.

THIRD: When the impression has been obtained, force each crown or inlay well to place therein and be sure that they are securely held in proper position. Then varnish and fill impression with a good soldering investment material.

In separating model from impression, be careful not to loosen or break off any of the crowns or abutment pieces, and when the model has been separated and properly trimmed, carefully adjust wax "bite" and mount upon articulator.

FOURTH: Select Goslee teeth of proper size and color. The selection can be best made with the sample moulds, fitting them to the model, and recording the mould number selected for each tooth separately. Care should be exercised to select teeth as nearly the proper size as possible. In this connection, observe the same precautions as to size and possible grinding as indicated for single crowns, and for the same reason.

FIFTH: When teeth of the proper size and color have been obtained, and any little grinding demanded has been done, each tooth should be backed up separately with 38 gauge pure gold. This may be done by either swaging or burnishing.

If the swaging method is used, fill the swaging ring with soft modeling compound and slightly imbed the tooth therein. By means of the soft rubber plunger and swaging press the backing may then be swaged directly to the tooth. When a swaging outfit is not handy, a good adaptation may be effected by burnishing. As soon as the backing has been properly adapted and all surplus trimmed away, perforate the backing to accommodate the small post which comes with, or may be made for, the tooth. Sustain the relation between backing and post with wax, remove from the tooth, invest and tack together with a small bit of 22 or 20 karat solder.

SIXTH: Adjust all of the teeth thus backed up with pure gold to proper positions on the model, using soft wax to sustain them. If the projecting surplus ends of the posts interfere, they should now be cut off, always allowing a sufficient length to remain to insure ample strength in their subsequent attachment to the finished backing. This should never be less than 1/16 of an inch, and for cast work this end should be "headed" by grooving or notching.

SEVENTH: Moderately soft casting wax should now be added to each backing until the form, contour or shape desired in the finished piece obtains, carving each backing up *separately*.

The sprue-wire should now be attached, the porcelain tooth removed, the backing invested and the casting made.

The use of a thin pure gold backing on each tooth in this manner insures a proper relation of the short sustaining post, and a smooth, well adapted surface presenting to the porcelain, such as would not obtain if the tooth was backed up entirely with wax. It also overcomes any change of form which might result from shrinkage or warpage of the casting.

While backings for two, three, or even four teeth might be cast in one piece in this same manner, it is not advisable, because of this shrinkage or warpage, and less display of gold between the teeth, and all-around better results are to be obtained by casting each backing separately, and subsequently uniting them with solder.

The desired reenforcement of the backings and the general form of the lingual surfaces may be obtained with a high grade of solder, instead of casting, but greater and more uniform strength, as well as better form, result from casting.

EIGHTH: When each backing has been made and finished, the teeth should then be placed in position therein, and all of the parts then assembled in proper relation on the model. This relation should be securely sustained with hard wax, melted against the backings and the model, being careful not to allow any of it to get on the porcelain teeth. All of the teeth should then be carefully detached from their backings, the spaces between each backing and the abutment pieces filled with soft melted wax to keep them clean, and the case invested for soldering. Great care must be exercised to have the case so invested as to insure the proper relation of the parts during their assemblage with solder.

NINTH: When the investment is hard, all particles of wax should be removed with boiling water to insure clean joints. Small pieces of platinum or iridio-platinum wire should now be fitted into each joint. As these joints are necessarily small and solder is always more or less brittle, some reenforcement, such as strong pieces of wire, is regarded as absolutely necessary to insure ample strength. In this connection the utmost care must be exercised in obtaining a maximum of strength in *every joint,* and particularly in the attachment of the abutment-pieces. It must be remembered that the strength of the porcelain in these teeth is adequate, but that this strength is obtained to some extent at the expense of the amount of gold used in the completed structure; therefore, the amount of gold necessary, being diminished, all of the strength possible in each and every joint is demanded.

TENTH: When all of the joints have been thus reenforced and strongly united with not less than 20 karat solder, the fixture should be thoroughly cleaned in the acid bath, and then finished with stones and disks to the point of polishing. The teeth should now be cemented to place, using a cement approximating the color of the tooth, and not attempting to mount more than two with any one mix.

When the cement is thoroughly crystallized, the piece may then be finally polished and mounted.

For those cases in the anterior region where abnormalities of occlusion or elongation of the opposing natural teeth demand *thin facings,* the ordinary type of long pin facings may be used. In their use, however, the best results are to be obtained by previously backing them up separately with thin pure gold, adding wax to this to the desired form, removing the facing, placing graphite points in the holes which receive the pins, and casting. The pins may then be threaded and, when the backings have been assembled with solder, the facings may be cemented to position, thus obtaining all of the previously mentioned advantages of cementation, combined with better form and more uniform strength in the fixture.

In addition to these, for those cases particularly in the lower arch, and in exceedingly "close-bites," where cosmetics is not a factor, or where the extent of absorption or the elongation of opposing teeth precludes the use of porcelain in any form, the all-gold, cast dummy may be used. Such dummies may be made to conform to the requirements of occlusion, adaptation to gum—if such is required—and contact with the attachments, in wax, and then invested and cast in one piece. This type of "dummy" is useful in supplying the lower second bicuspids and first and second molars, and may include only the occlusal surface, thus forming the so-called "self-cleansing" type of bridge, or the entire tooth with or without a saddle, as the requirements may be. The former type of construction is indicated only where there is an excessive degree of absorption, which will permit of sufficient space between the gum and occlusal surface to insure self-cleansing properties, and wherever this space is not great enough *to be easily kept clean,* direct contact with the gum will afford a more hygienic result. In other words, there should be plenty of space, or none at all.

With these, the problem of attachments and of intermediate dummies for almost universal application is simplified and systematized.

The remaining feature incident to the construction of all forms of fixed bridgework involves only the proper assemblage of the various parts. While some are casting all attachments and backings with an alloy of five per cent. of platinum and pure gold, and subsequently assembling them with pure gold, thus using no "solder" whatever, still a good grade of 22 karat gold or coin gold may be used with equally good results. When either of the latter is used, the final assemblage may be effected with 22 karat solder, *and providing there is absolute contact between all of the parts to be united* the procedure is thus somewhat facilitated, and the results are uniformly good.

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REMOVABLE BRIDGEWORK.

The same general ideas are also applicable to the construction of removable fixtures.

For this class of work, also, three general types of anchorage to the supporting teeth or roots will be found to adequately meet the requirements of the average case. These embrace "clasps," the "telescoping tube and split post," and the various forms of manufactured attachments.

Wide clasps encompassing three angles of the tooth, provided with an occlusal rest, not cast, but made of heavy rolled clasp-metal alloy, probably afford the very best means of obtaining anchorage to the natural or artificial crowns of bicuspids and molars.

That clasps should not be cast is especially emphasized, because the molecular rearrangement resulting from casting most of our present alloys destroys to a greater or less extent the very qualities of strength and resilience demanded of them, and which undoubtedly obtain best in a rolled or drawn metal or alloy.

In all forms of removable bridgework or partial dentures, where clasps are used, however, some form of occlusal rest is necessary as a means of providing against subsequent settlement of the case. If this precaution is not observed, complete loss of occlusion and usefulness will soon follow.

The telescoping tube and split post attachment is useful particularly when confined to the *roots of the six anterior teeth,* or in cases where the tube may be confined within the tooth.

The Roach, Morgan and other types of manufactured attachments will also be found valuable when used in connection with either porcelain or gold crowns or inlays on the cuspids and bicuspids.

In addition to these, I am pleased to show you a method of attachment which, while perhaps but a modification of some of the previously mentioned types, is entirely new and more or less universally applicable.

This attachment consists in utilizing the grasping principle of an open tube with straight and parallel sides, which is the removable part of the fixture, in combination with a round wire, of about 12 gauge, attached to and therefore a part of the "fixed" portion of the structure, but lying in a horizontal position instead of in a vertical one in its relation to the supporting fixture.

Such an attachment may be made by utilizing the tube of a "Roach" attachment in combination with 12 gauge clasp metal wire, and while simple and easily constructed is especially useful in extensive cases, where the abutment pieces are assembled, though equally applicable to less extensive, or to the most simple, cases.

It is easily applied, easily tightened when loosened by wear, takes up but little space, does not require absolute parallelism when more than one is used on the same fixture, is applicable alike to either gold or vulcanite work, and is secure.

The conception of this attachment on my part was forced upon me in a very interesting manner. About a year and a half ago I inserted a large fixture in the upper jaw, involving the six anterior teeth and the two third molars, the latter being joined to the former with an iridio-platinum wire, 12 gauge, resting upon the summit of the ridge on each side. In about the center of the wire on both sides a vertical split post was attached. This constituted the fixed structure, which was cemented to place, the split posts supporting a removable saddle, which supplied the bicuspids and molars on each side.

A few weeks after the completion of the case the patient returned with one of these split posts broken away from the fixture, leaving nothing to hold that side in place. At first this seemed a calamity which meant only the destruction and removal of the structure, and the making over of the entire case. As this was not a particularly pleasant procedure to anticipate, and as necessity has always exercised a material influence upon the possible inventive ingenuity of man, it occurred to me that I might obtain attachment to that wire by grasping it with an open cylinder, or tube, lying parallel with it, and thus avoid removing and rebuilding the whole fixture. This I did, with the result that this side worked so well and seemed so much stronger than the one where the vertical split post remained that I subsequently ground it off and used the tube, and the use of this form of attachment in many cases since then has given me more satisfaction than I have ever obtained from any other method.

A similar attachment, known as Gilmore's, is now being manufactured, and may be easily obtained by those who do not care to make it.

When the type or types of attachment thought to be best indicated have been selected, adapted, and completed, the casting process then offers splendid opportunity and great possibilities for the subsequent formation of the body of the fixture, and in this connection I believe that the successful casting of large pieces is only a question of the development of proper technique.

In the construction of cast bases, if a good model of a high grade investment material is obtained, and if the wax base is carefully formed, made sufficiently thin and properly stiffened, the process offers the same assurance of accuracy of adaptation and of strength as previously indicated, and the possibilities are equally unlimited. For all forms and sizes of saddles, or bases, coin gold seems to be especially adapted to cast work, and to afford all of the integral strength ordinarily demanded.

As a final suggestion, permit me to again impress upon you the advantages of simplifying and systematizing your methods, and of casting; the necessity for careful technique and the unlimited possibilities resulting therefrom.

DRUG HABIT IN THE TREATMENT OF DENTAL LESIONS.*

BY J. G. REID, D. D. S., CHICAGO, ILL.

I have been considerably perplexed for some time to find a subject that would be of special interest to write about and at the same time try not to entertain this society with a paper filled with flashy theories unworthy of your attention. Your writer is very deeply impressed with the significant fact that he will fall quite short of presenting this subject in a manner suitable to his liking, as well as to that of his hearers.

The space of time covering a half century past may be recognized as the one in which a wonderful and rapid growth of knowledge relative to both dental materia medica and dental therapeutics has taken place. Within the above period the dentist has been abundantly favored with written communications and numerous text books, all of them standard—dealing with the subject of dental materia medica and therapeutics to such an extent that the profession has become so thoroughly entrenched and so copiously drenched with drugs that it ceases to be a wonder if we should suddenly wake up some bright morning and find ourselves labeled habituates of a drug habit. I desire to confess that an interval of my professional career was unreservedly devoted to a study of drugs and especially the results of their action as applied to the cure of various dental lesions. I fully grant you the acknowledgment that it is a fascinating field in which to labor and one that is capable of furnishing the plodding investigator unlimited opportunities for investigation; but I must admit when my enthusiasm was at its maximum height, it began to dawn on me that my foundation was apparently poorly laid—at least I felt so—because results were not always forthcoming to my entire satisfaction—something was lacking. So I began to analyze the situation and the more I studied it, the more convinced I was that the cart was in front of the horse. I began to realize that I was using drugs without knowing what I was using them for—in other words, following an empirical practice.

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*Read before the Odontological Society of Chicago.

To name a disease, and routinely prescribe for that name, regardless of the pathological peculiarities presented in each individual case, will never be attended with success. The tendency of the profession has heretofore ignored pathological indications for remedies. The best success requires that we should recognize the relationship between the morbid condition—the lesion and the remedy we employ.

I have noticed in a cursory reading of recent dental literature—say for the past year—there seems to be a growing tendency to discard the "drug habit" of treating some of the dental lesions, and I fully believe the time is rapidly approaching when a rational employment of drugs will supersede the one based on traditional empiricism.

If each member of this society would take a systematic inventory of his stock of drugs on hand at the present time, and compare them with those that occupied the dental cabinet thirty years ago, he would find to his great surprise that about ninety per cent. could be advantageously labeled "tommy rot"—valueless—in so far as the actual every-day need of drugs are concerned. To more fully illustrate the point of argument I will cite as the most common of the many dental lesions with which the dental surgeon has to deal—pulpless teeth. There are almost as many therapeutical agents recommended for the treatment of pulpless teeth as there are seconds in a minute—and to still further clinch the argument, each drug has a votary to back the claim of his pet. Under these circumstances is it any wonder that we find the average dentist becoming overwhelmed in his effort to make a selection of remedies suitable for the purpose intended?

So long as these seemingly diversified opinions prevail regarding the care and management of pulpless teeth, there remains very little encouragement for any one individual to promulgate a system of reform in this direction.

It is my experience, and has been for a long period of time, that the overtreating of teeth is altogether too widely practiced; teeth do not respond readily to recovery when thus abused, and because they do not yield at once, they are still further subjected to a systematic drug soaking process, at regular intervals for an indefinite period of time, and which ultimately terminates in a condition recognized as lameness, which I am sure puts many teeth out of commission temporarily, if not permanently.

Too much reliance is placed upon the use of drugs to perform duties that rightfully and strictly belong purely to mechanical interference.

The future comfort and behavior of pulpless teeth depends entirely upon the scrupulous care with which pulp canal contents have been removed; if we fail in our efforts to accomplish this, it is my opinion that the drug soaking habit will be of precious little consequence in tiding us over the difficulties.

I have fully passed through all the stages of a drug habit in my contentions with the lesion known as pyorrhoea alveolaris; and the result of my feeble efforts to effect a permanent cure have been attended with failures in a great number of instances.

In many of the cases where I have placed the greatest confidence in the use of drugs to restore the teeth to peaceful relations in their respective receptacles, there has been disappointment to me.

On the other hand, where I have been thoroughly successful in removing the deposits from the roots of teeth, and knocking off the necrosed margins of the alveoli, which are almost invariably found in the progressive stages of the disease—then follow this treatment immediately with a very thorough and persistent flushing of the parts with a normal salt solution hot as can be tolerated—very little use of drugs has been required for after treatment. The treatment of this lesion with drugs is overdone as much, if not more, than the one previously mentioned.

Therapeutics, as yet, consists of a collection of facts. But much of the practice of dental medicine of today consists of mere dogmatical opinions, which change from year to year, to keep pace with the speculative opinions of the leading men of the dental profession.

Therapeutics, or the treatment of disease, should be as accurate as is possible for human minds to make it. There is one great truth that stands out in bold relief—that is, in most cases there is a relationship of similarity between the physiological action of the remedy, and its therapeutical action. And he that fails to recognize this fundamental fact, will fail of success in the use of drugs.

One of the main things to guide us in the treatment of disease, is a rule by which to select a remedy to meet the morbid condition pointed out by the symptom or smyptoms. It is clear then that we must be thoroughly versed in the precise action of our remedies, and in the pathological indications calling for them. Our diagnosis must not be based upon generalization, but upon a clear knowledge of the various pathological peculiarities pointed out by the symptoms in each case.

The less we understand the pathological indications calling for remedies, the greater uncertainty there will be in proper drug selection and application for the correction of disease.

In conclusion I desire to emphasize this fact, that when we as dentists shall devote more time in a better understanding of physiology, and embryology, familiarize ourselves more along the lines of cell life—as exhibited in both health and disease—then, and only then, can we pose as experts in dealing with scientific therapeutics.

SOME OF THE PREDISPOSING CAUSES OF DENTAL CARIES.*

BY G. H. HENDERSON, L. D. S., D. D. S., SPRINGFIELD, ILL.

Caries of the teeth is one of the chief reasons why our profession is in existence, but with all our skill and learning and the time that has been spent studying the causes of this disease, there is no doubt the future will yet reveal much that we do not at present know.

There are two distinct causes of caries, viz: Predisposing or Indirect, and Exciting or Direct.

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*Read before the Sangamo-Menard County Dental Society, April 8, 1912.

Our own Prof. G. V. Black says in his *Operative Dentistry,* Vol. I, Page 115: "A predisposition to disease is generally considered to be a condition of the body juices and cells which renders the person liable to that particular disease." In speaking of heredity Dr. Black says: "A person is not born with tuberculosis; it is not transmissible from parent to child, but the child is born with a material constitution of body which renders it particularly liable to contract the disease. It will not have tuberculosis unless exposed to the tuberculosis infection; but it contracts it more readily than other people. There is that element in the body juices and tissues which enables that particular microörganism to grow more freely or produce more injury that in other persons. That is what constitutes a hereditary predisposition to disease.

"We find in certain families a hereditary predisposition to caries of the teeth that is strongly marked. If a family of children is presented for treatment and it is found that the father or mother, or both, have suffered severely in early youth from caries of the teeth, we may be reasonably sure that the children will suffer likewise. We find this almost universally true of families; not only this, but we find in very many instances that the first beginning and the order of progress will be in the same teeth, and otherwise similar in character and form."

These statements I believe to be absolutely true, but, even though they be absolutely true, do they tell the whole truth on this question?

Some one has said that "if we were to extract the teeth of the girls at fifteen years of age for five generations, the succeeding generations would be immune, not only from caries, but from teeth." As a matter of course, this has never been purposely tested, but we have all seen cases where the molars and bicuspids had been extracted in early life and no substitutes supplied, at least in one jaw, generally the lower one, giving the patient absolutely no means of mastication.

What will be the effect of this condition? The food not being thoroughly masticated, is not properly mixed with the saliva, and is swallowed before it is ready for proper action by the stomach, which in turn causes this organ to do work for which it is not fitted. Proper assimilation and absorption of the food is retarded, and some of it is thrown off as waste. This results finally in a weakened system, which increases with the length of time the condition lasts. We will find where these cases exist the children will have caries of the teeth early in life just as recited above by Dr. Black.

Suppose we were to extract these teeth even though they were sound, would not the same condition of weakened vitality follow? And the answer would undoubtedly be, The results would be the same in both cases. Then we ask, are these results due to heredity, or to malnutrition, or both?

Dr. Black, in *Operative Dentistry,* Vol. I, page 6, says: "The term 'atrophy' includes two distinct ideas; the one is a failure of the development of a local part because of a failure of nutrition, the other is a wasting of a part because of a local failure in the nutritive processes. Atrophied teeth belong to the first class; they have never been fully formed. In the human teeth there is no process of repair and the deformity is permanent. This deformity always consists in a failure of the formation, or an imperfect formation of some specific portion of the tooth and of several teeth together. The portion of the several teeth affected is always that portion of each that was in process of formation or growth at the same period in the person's existence."

Page 11: "Atrophy of the teeth is always caused by some illness that has interfered with nutrition at the time the particular parts of the teeth affected were in process of calcification." In speaking of Hutchinson teeth, Dr. Black says on page 12: "There is no special form of disease that is especially blamable for this affliction, but that any form of disease that seriously interferes with nutrition is liable to bring about this result, i. e., that it is not the particular form of disease *but that it is the condition of malnutrition that is the cause,* no matter what the disease which has induced that condition." Evidently malnutrition is considered by Dr. Black as the cause of many of these troubles.

What will cause malnutrition?

Lack of sufficient teeth for mastication; lack of proper diet, lack of exercise, etc., an impaired or diseased digestive system whether caused by sickness or otherwise. All of these causes should come under our personal supervision, but to the question of the teeth perhaps we have been willing to pay the most attention. It does not require the learning of a dentist to know that any person without sufficient teeth for proper mastication will suffer from malnutrition, but any person is free to admit this is the case. It is also true that it may be some time after the loss of these teeth before the evil effect will be noticed on the general system. Each and every person must meet such a condition for himself, but on the parents a greater responsibility rests. No man or woman in a weakened condition is physically fit to become a parent, and right here is where our trouble begins, because of the fact well known to all that this condition has not been a legal bar to parenthood.

During slavery days we are well informed that on large plantations the large, strong and robust men were used as fathers of the flock. This was scientific breeding and this principle is absolutely adhered to even to this day in the mating of all classes of live stock. No poultry man of any repute would keep in his breeding pens any fowl which has had even a case of roup because of weakened vitality and the tendency to transmission. This is true in all cases of live stock, and such conditions are watched very closely by all stock breeders, as heredity and disease are recognized to a very great extent by them. I am reliably informed that a polled bull, of a recognized polled breed, bred to horned cows, will leave from fifty to seventy-five per cent polled calves.

But when it comes to human teeth, is heredity to be praised when caries is absent or blamed when present in the children?

Why is it that the older children in a family very often have the best teeth, especially in those cases where the mother gradually lost her teeth without having substitutes inserted? Let me give you an example of many I have seen: A few years since, a man brought the writer his son of sixteen years for treatment. Afterward his daughter, accompanied by both father and mother, came to have a root extracted. This daughter was married and the mother of four children, and with the exception of this root, had no cavities in her teeth and none had been filled. After this, another son of twelve was presented and, like his brother, required several fillings. This man asked me why it was his daughter had such good teeth, while the teeth of the boys seemed so poor. Having examined his wife's mouth, I asked him how long she had been wearing artificial teeth? He replied, fourteen years. I then asked him what was the condition of her teeth when they were married. He said, *good*. At this time she was wearing a full upper denture and the anterior six below were natural and in fair condition, and this was all she had for mastication for all these years, as he said the posterior teeth were extracted with the uppers. I then told him that at the time of the birth of the daughter the mother had good teeth, while at the time of the birth of the boys her teeth were in decidedly poor condition and asked him what else he wanted to know, and he very quickly replied, "Nothing; I never saw it in that light before"; but he knew I was right. Now, then, was this caused by heredity? I say no. What, then? Malnutrition caused by lack of teeth in the mother, and we have all seen such cases and with similar results.

But, you say, only the first molars and the centrals of the permanent teeth have begun to calcify before one year of age; how, then, could this result be accounted for? Lack of vitality in the general system, decayed and neglected teeth in the deciduous set, causing still lower vitality as age progresses, coupled with a lack of the proper food and the weakness resulting from sickness and disease, would all help to produce this condition.

Now, if, as Dr. Black says, atrophy consists in a failure of the formation or an imperfect formation of some specific portion of the tooth, why could we not have a failure of one or more of the enamel rods in a first molar and their space occupied by the cementing substance that fills the spaces around these enamel rods, and then when exposed to the exciting causes of caries allow entrance to the enamel and a cavity be the result? I have seen cases of very young children develop caries within a few months after the eruption of the deciduous teeth. One of these cases I expect to treat soon, where a boy only sixteen months of age has developed a cavity in an upper central, involving one half of the incisal edge. His mother could not wear a lower partial during gestation, and I have been looking for this result. Only last week I examined a first molar with only a portion of the crown exposed and a well defined cavity in the occlusal surface was found.

If loss of teeth will not cause a lack of vitality, why is it that all our civilized governments steadfastly refuse to admit men to their regular armies unless having a fairly good set of teeth?

Now, on the other hand, if a mother does lose her teeth and suitable substitutes are inserted, so that mastication can be properly accomplished, and before a permanent loss of vitality has followed from a lack of teeth, I firmly believe the children will, with proper care, develop a better set of teeth than would otherwise be the result.

What lessons should we draw from these observations?

All children should be taught the proper care of the teeth and the importance of keeping them filled.

All expectant mothers should have a full and efficient set of teeth, the natural ones to be preferred, but artificial substitutes inserted so as to make up for any that have been removed.

Mothers should be taught the necessity of keeping their teeth and the serious results that are sure to follow their extraction.

PUBLIC DENTAL EDUCATION FROM THE VIEWPOINT OF THE PROFESSION.*

BY H. L. DICKINSON, D.D.S., ALTON, ILL.

In considering public dental education from the standpoint of the profession, the ideal of service constitutes its inspiration. This movement marks an epoch in dentistry. It is the point of cleavage between what some people have been pleased to call tooth carpentering and professionalism. It is the broadening of a horizon bounded by the four walls of an office, in which one's duty to humanity was limited to service therein, into the nobler conception which requires the spreading of the gospel of oral hygiene to all.

Dr. B. Holly Smith said recently, "A large per cent of the men practicing dentistry need to be converted from the 'public be damned' policy to the Christian idea, that to serve is a privilege, and the life and health of a community a responsibility."

In that phrase he has epitomized that which differentiates technical ability alone from true professional ability. This one idea of service is the keynote of growth in the individual, it is the thing that makes him a factor in the minds and hearts of men. The greatest teacher that ever lived taught and exemplified in His life this idea of service. It was the central idea in the lives of Washington and Lincoln, and on the other hand the towering genius of Napoleon ended in solitary exile because the controlling ideas in his life were those of selfish ambition and personal aggrandizement.

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*Read before the Madison County District Dental Society, March, 1912.

Applied to us, then, this idea of service is the essence of true professionalism. It is this idea working in us which is broadening our conception, individually and as a profession, of our part in the onward march toward the betterment of human life. This great movement for the furtherance of public dental education is not selfish in its origin, and it is the culmination of all that is highest and best in our professional life—it is significant of the spirit of the times; all through the fabric of our national life, we see germinating in the hearts and minds of men the feeling of responsibility for the welfare and uplift of their fellow men.

This idea is coming to its fruition in those great movements for the advancement of mankind, which are evidenced in the political, sociological and educational progress of the times. Politically, men are sloughing off party ties; they are looking behind the individual and his party affiliations and seeking out the principles for which he stands. In every state and municipality throughout the land, we see the working out of reforms through social service.

This is evident in the great reforms in Kansas City, which are being brought about through their Board of Public Welfare. There has come the general establishment of juvenile courts, segregating the youthful offender from the adult criminal. Prison reforms, tending by decent, corrective, educational methods, to bring back the criminal to a sane viewpoint of life, rather than to brutally crush in him the last spark of humanity. Child labor laws are protecting and conserving the health of child laborers.

There is generally the impulse for better hygienic conditions in the congested tenement centres and in the factories and schools. Everywhere in these days is being voiced an emphatic, affirmative answer to the world old question of Cain, "Am I my brother's keeper?"

Of the same impulses and ideals is born this movement for public dental education. From the standpoint of the profession it is altruistic in motive. It is cleared of the charge on the part of the laity of self seeking. In the resultant enlarging of the field of dental operations, there must come a corresponding increase of laborers, for with approximately less than ten per cent of the population receiving dental attention, the profession is already taxed to care for them.

Gov. Woodrow Wilson recently said: "Back of all reform lies the means of getting it. Back of the question, what we want, is the question, how are we going to get it?" For a people to enjoy the benefits of a highly organized society, they much first be educated up to the standards of an advanced civilization. So in this reform in which we are engaged there must first be brought about a realization on the part of the people of the importance which the healthy condition of the oral cavity bears to the general physical condition. This can only be accomplished by continued, organized, educational effort.

Coincident with the growth of this movement among the people must come a raising of standards within the profession. We must measure up to the requirements of an enlightened people, who will demand from us the highest professional abilities and service. In the conduct of this educational campaign, there must be developed, for the heads of its various departments, men of large vision and efficiency, and they must have a hearty cooperation on the part of the individual members of the profession. It is proposed to carry on this educational propaganda through the agencies of the public press, public schools, and public platforms. It will also have its political aspect, because ultimately the ideals for which it is working must be engrafted upon the policy of the state.

Its results must be conserved by the enactment of such laws as will insure to the people the benefits to be derived. There should be an alignment, therefore, upon the part of the profession, with men, who, in seeking election to our lawmaking bodies, are imbued with the idea that they are the servants of the people, and will not debauch our legislative halls with the spectacle of jack pot methods.

This is my conception of the attitude of the profession in this movement. Born of unselfish motives, having for its ideals the safeguarding of the health of childhood, the raising of the physical, mental and moral standards of the nation through increased efficiency, it embodies the spirit of a crusade. Receiving its impetus from within the profession, as it gathers momentum it will attract to its cause all those forces for righteousness, which, while working through different channels, have for their common purpose the betterment of mankind. The great State Society of Illinois has already taken her stand in the vanguard of this movement, and it behooves every component part to be alive on this question and lend every assistance in their power to furthering the plans outlined by our state society.

VACUUM CLEANING VS. COMPRESSED AIR.

BY W. C. DALBEY, A.M., D.D.S., DU QUOIN, ILL.

Some time ago it occurred to me that I was not getting the service out of my compressed air outfit that I should, and that possibly after all I was working along wrong lines; and as there are usually more ways than one of accomplishing the same results, it further occurred to me that probably there were two sides to this question also. Then it came to me, Why not try the vacuum way? Everything is cleaned by the vacuum way nowadays. And, too, patients complained of odor from the compressed air nozzle. This was probably due to foul air in the tank from oils or machinery. If a suction would accomplish the same results, of course this objection would be a thing of the past.

By slightly modifying my tank by putting in a removable cover to facilitate cleaning, and a screen of muslin about three-fourths the way up, when standing the tank on end, to keep anything from entering the vacuum pump, and by changing my outlet and inlet tubes and reversing the pumping arrangement, I accomplished it with little trouble. Also, the opening of the suction nozzle I enlarged somewhat.

As it is now, instead of scattering the chips or foul debris from a nasty, carious tooth all over the patient's mouth, and sometimes into my eyes, it is all done cleanly, and I do not have to squint for fear of having some of the vile chips reeking with germs thrown into my eyes. By the old way, some of the chips were blown into recesses and angles all the firmer, especially if the chips were a little wet. In the new way, every particle of loose matter is lifted out and drawn away.

We used to talk about dehydrating a tooth by putting alcohol into the cavity and driving it out with, generally, warm air. The only true way, in my judgment, to dehydrate a tooth or to remove any moisture from the tubulii is by suction, and it is easily done by putting around the nozzle a little unvulcanized plate rubber to close completely the cavity when inserting the nozzle.

And it is a pleasure to see how nicely you can keep a tooth socket from blood and saliva when operating upon that other root you didn't get the first time, or when placing medicaments after extracting.

By placing over the nozzle a small cup, such as is used in polishing teeth, I am enabled to extract from a fistulous opening any pus found in abscess conditions, and in placing medicaments in a tooth of this character, one is enabled to draw the medicine through the tooth and through the fistulous opening and not get the medicine all over the mouth. In doing this, however, one ought to be very careful to have the cavity sterile and no loose matter around to be drawn through the canals. Also, in an abscessed condition where no opening exists through the soft tissues, you can, by making a small opening near the lowest point and applying the cupped-nozzle extract very readily the pus present.

Again, my saliva ejector did not work to suit me, so putting a "Y" into my hose I attached that, but it worked too strongly and kept the mouth too dry if anything, so putting a valve between the ejector tube and "Y," I instructed the patient to operate it as desired.

I do not use the rubber dam when inserting gold fillings. Cotton rolls or napkins with the vacuum ejector accomplishes all I desire with ease, and my patient is pleased to escape the dam.

In inflammatory conditions, one is pleased to see the results of so called dry-cupping, by puncturing the skin and drawing away a little of the blood from the inflamed part by the little cup before mentioned, thus reducing the inflammation very materially.

Incidentally, with the vacuum scheme I dry my hypodermic needles and throw the wires away. And how nicely it removes any dust from the drawers of my Allan table. Possibly other uses will suggest themselves later.

PRESIDENT'S ADDRESS.*

BY C. C. CORBETT, D.D.S., EDWARDSVILLE, ILL.

Members of the Illinois State Dental Society:

It is an honor to be elected president of any organization that has good for its object, but to be elected presiding officer of this great society makes me more than appreciative of the honor conferred on me one year ago.

For a period of forty-eight years this society has been meeting annually for the purpose of mutual benefit, and for the benefit of those who place themselves in our hands for services; also to take counsel how to render and receive the greatest benefit from its present and future deliberations.

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*Read before the Illinois State Dental Society, Springfield, May, 1912.

In bidding you a hearty welcome to this meeting, permit me to say that it is the hope of the officers and committees who have prepared this program that it may redound to the credit of us all individually and collectively.

Now let us show our appreciation of the efforts of those who have prepared papers for this meeting by being prompt at the assembling of each session, paying close attention to the reading, freely expressing our views in the discussions, and we hope no one will take exception to anything that may be said for the advancement of principles.

I wish to especially invite the younger men to feel free to take an active part in these meetings, as there is no short cut to maturity and the younger our members become active the better prepared they will be to carry forward the great work of this society when that duty devolves on them. It is to their interest and to the interest of this society that they freely express their views, and by giving this invitation it is not intended to shelf the older members.

The time has come when we need the co-operation of every member; the good judgment of the matured brains to guide, that there may be no mistakes, and the aggressive work of our younger members to assist in making the influence of this society felt in every town and hamlet in this great state, in educating our citizens in dental hygiene and oral prophylaxis and bringing all our schools under dental inspection.

It is time also when we need the united efforts of every member to provide ways and means to carry to a successful finish the greatest meeting in the history of the dental profession as a suitable celebration of our golden jubilee. This means the greatest effort that this society has ever undertaken, and two years should be given to mature the plans for such a meeting that the dental profession of the entire world will take notice of what is being done in Illinois. In a letter recently received from the president of a neighboring state society, he says, "I do not believe all the dentists of Illinois realize the great treat you have in store for them at your state meetings. We are making progress in our state, and hope some day to catch up with you, if you will stand still."

Stand Still! Stand still! Does not the very thought of the past history of this society, of all that it has accomplished, always progressive, no mistakes charged against it, standing foremost of all dental societies, make every man present feel as Napoleon felt when told that he could not cross the Alps, he replied, "There are no Alps."

Never has the Illinois State Dental Society had a greater task before it than at present. Never has there been a time when the duty of the dental profession for the future, and particularly the State of Illinois, was so plainly marked out as now.

I do not think there has ever been a time when the entire profession stood as a unit in carrying forward its work with such unbounded enthusiasm as today, and with such unity of purpose in advancing the great work that is being carried forward, namely, dental hygiene, oral prophylaxis and school inspection, there can be but one result—a better educated public. With a better educated public comes better citizenship; with better citizenship comes cleaner politics and a higher common plane for posterity.

"A sound mind in a sound body" is a phrase that has been quoted by writers and lecturers on hygiene and sanitation for many years, and while we are charmed with its truth, yet its influence ends in feebleness and slumber, unless the valuable lesson taught by it is supplemented by aggressive action on our part to attain that soundness of mind and body.

Then I will ask, Where shall this aggressive work commence to be most effective? The answer is, with the child. Children have ever held a place close to the hearts of men. Charles Dickens, the 100th anniversary of whose birth was celebrated a short time ago, beautifully expressed a sublime truth in the following words:

"They are idols of hearts and of households,
  They are angels of God in disguise;
His sunlight still sleeps in their tresses,
  His glory still gleams in their eyes.
Oh, those truants from home and from heaven,
  They make me more manly and mild;
And I know now how Jesus could liken
  The Kingdom of God to a child."

The above sentiment expresses the outpouring of a great heart for a child.

Parents exercise the utmost precaution and strive strenuously to provide every safeguard and comfort for their child. Is it not natural, then, to suppose that were they made cognizant of the danger threatening its welfare while it carries in its mouth conditions favorable to infection in a lot of carious teeth, they would use their utmost endeavor to correct the defect, and avert any impending danger of disease, mal-occlusion or irregularities? There is also the possibility of that child falling behind his classes, and entering life with a handicap, when a little care and attention at the right time might have changed its entire life from a drag in society to one of influence and uplift.

Dr. W. A. Evans says: "About one year ago the authorities of four schools situated close together in New York City concluded that they would investigate the reason why their students did not make grades. They investigated the physical condition of the children that had not been able to pass from one grade to another during the year. The conclusion that they arrived at was that it is possible for all school children that are physically sound to make the grades that are prescribed by school boards, and that when a child does not make the grade it is the result of physical conditions rather than of mental conditions. To this there are certain exceptions, but the rule holds good."

It has been found that there are over eight thousand school children in the City of Chicago that fail to pass their grades annually on account of their physical condition resulting from bad teeth. It has also been estimated that to maintain these eight thousand children in school for one year, to bring them up to passing, costs the tax payers of Chicago nearly $300,000 annually, and these figures would be more than doubled if extended at the same ratio over the entire state. This would indicate about twenty thousand school children in the great State of Illinois that fail to pass their grades because of physical conditions resulting from bad teeth, and the extra expense to tax payers of maintaining these children in school at the same ratio would amount to over $700,000, but this enormous sum is of small consequence as compared with the handicap with which this large number of children have to enter upon the duties of life. If there is not an endowment of some kind, or if the state does not make an appropriation sufficient to look after these children and remove this handicap, a very large percentage of them will gradually drop out of school before they are half equipped for the responsibilities of life.

Many will enter the society of their respective communities as irresponsible citizens, without education, without judgment and without decision. Children entering manhood or womanhood under these conditions very often become objects of charity in the community in which they live, or help fill the almshouses and become permanent charges upon the state. It is believed that all children passing through the public schools of our country have a fairly good show for the battle of life. It has been shown by the investigation of the four New York schools that all children physically sound can pass the grades as prescribed by our school boards.

If we have from eighteen to twenty thousand children that are falling below their grades on account of the condition of the oral cavity, is there a member of the Illinois State Dental Society that will not agree that we have a stupendous task before us? The task of providing ways and means, as nearly as possible, of placing the mouths of these children in a normal condition. Indeed, the responsibility is great, but when we consider the past achievements of this society, and the present personnel, is there one present who will not join in the exclamation, "There are no Alps." There is no task too great for this society to undertake for the benefit of humanity.

At our last annual meeting in Peoria, there was a Public Service Commission appointed, with Dr. W. H. G. Logan as chairman. That meeting adjourned on the 12th day of May, and on the 15th, just three days later, Dr. Logan had the work completely outlined for the year, which plan was adopted and has been so successfully carried out that the work of this commission promises to be the crowning work of this society.

There were twelve public meetings held throughout the state in accordance with the plans as published in the September bulletin. With two exceptions, the attendance was five hundred and over. The best attended meetings were: Paris, 1,000; Edwardsville, 1,200, and Belleville, 1,400; at these places the halls were taxed to their capacity. The total expense to the society in carrying on this work has not exceeded $350, and as $500 was appropriated for this purpose, there is a balance left in the treasury. A like sum of money has been spent by the local men in the towns where public meetings have been held. The number of people reached directly by these lectures is very small as compared with the number reached by the press notices, as in some towns the publicity reached as high as seventy full columns. You will better comprehend the magnitude of this work when it is stated that the chairman dictated over two thousand personal letters, and as this is new ground that has been covered, this commission is to be congratulated upon the success of the year's work and our society is under great obligations to Dr. Logan and the commission. This work should be continued for a number of years if we as a profession are to do our duty.

The dentist of today must possess a larger number of qualifications than any other professional or business man; not only must he have these many qualifications, but each one must be preeminent in his make-up, if he is to be a successful general practitioner. And yet, how insignificant a place does our profession hold in the eyes of the public, as compared with the importance with which it should be regarded.

Now as we extend our field of operations to the children, we will find our calling still more exacting, and it will be necessary to cultivate more assidiously the cardinal virtue of patience, that virtue which has already been cultivated to the limit, and has often reached the breaking point with every busy practitioner. This new field now being entered upon will certainly place most of our practitioners in many embarrassing positions, because of the extra time consumed with many of these operations, and the overlapping of appointments.

The dentist will be compelled to make friends with a new class of patients, he will be obliged to handle these new patients in a friendly manner, and when severely taxed by these operations, still gracefully hide his feelings both from the child and the mother who may be standing by; who may often take offense if dismissed promptly on the hour, and not given five or ten minutes to answer her many questions,—having no regard for the rights of the patients in waiting.

If the public knew of one half of the troubles that the dental profession are voluntarily taking upon their shoulders purely in the interest of humanity, they would not for one minute think that school inspection is an "advertising scheme." However, it does not matter what criticisms are made, or what exrta tax is placed upon the profession, our duty is plain.

This great work as instituted by our public service commission should be carried forward with all the energy at our command, and in conjunction with it should be established a bureau of inspection where all records of the state may be kept for future reference. The duty of that bureau should be to assist in any way possible either the commission or by giving advice to the local men of the various communities, furnishing blanks and keeping a record of all inspections; also a record of the sentiment of the different communities when favorably received, or if rejected, the reason why, and the class of people constituting the same. It would also seem eminently proper that this Bureau should keep posted as to any members of this society who are not in sympathy with any movement advocated, not for the purpose of coercion but if possible, in a friendly way convince them that the position of this society is correct.

The work of our publicity committee is progressing very favorably. There are now a very large number of newspapers running the articles prepared for that purpose, and others are rapidly being added to the list. As this field of work is something entirely new, the progress already made is sufficient to pronounce it a great success.

There have been enough articles published on dentistry, dental hygiene, and oral prophylaxis to be of great value to our citizens in an educational way, and no doubt in time this work will be extended so as to cover the most of the state. Dr. Warner is to be congratulated on the work he has accomplished.

There was a movement adopted by the National Dental Association at Cleveland last July to organize a national relief association, and relief fund, for the purpose of succoring any of its unfortunate members, or their immediate families, who may be in distress. This plan is to ask each state society to increase its dues $1.00 for each member, and let that additional dollar, so raised, be turned over to a relief committee; this committee consisting of three members to be elected by the state society. "It is the duty of this relief committee to take care of this fund, to solicit subscriptions, and receive donations or legacies that may come to their care, and to report to the national committee any cases of distress among their members that in their judgment deserve attention, turning over annually to the national committee the money collected during the year."

In a letter recently received from Dr. L. G. Noel, chairman of the national relief committee, he says: "Should your state reject our plan, I am exceedingly anxious for you to organize a relief club, let each man upon joining assess himself so much per annum, whatever he thinks he can give, two, three, five or ten dollars per year. Where states reject, and none have done so yet, we hope to see these clubs organized."

There is very much that may be said in favor of this relief plan. While we are all enjoying health and prosperity, and the luxuries of life today, yet in all probability the time will come with some of us, and we know not how soon, when this situation will be reversed. Old age is certain to cut off our revenue and we know not how soon some of us may meet with accident or misfortune and become disabled. If a competence has not been laid by, what a blessing to have such a relief fund—a fund that is so easily raised, and that one is entitled to draw from to bridge over such a period of distress. Money spent in life or accident insurance is certainly expensive compared with a fund raised in this way, with no expense attached to the raising, and probably very little expense if any in caring for and investing the same. One would think that no member of this society would refuse to join this movement, which is almost certain to be a blessing to some of our members, and possibly at some future period some one of his own family might become a beneficiary. Now, if this society should adopt this plan it would mean the necessity of changing our by-laws, and increasing the annual dues from three to four dollars, and this is a matter that should receive grave consideration.

We have a great responsibility in carrying forward the work of dental education and school inspection over this great state, and need the influence of every member. "Light is the task when many share the toil"—therefore it would seem wise, before any such step is taken to first ascertain what per cent of membership, if any, would withdraw on account of the increased dues. This society wields a great influence for good, not only because of its personnel but because of its numerical strength, and its influence is felt not only throughout the entire profession, but also by the public of this great commonwealth, and for it to take on any new obligation that would weaken it by withdrawals, to any considerable extent, would be deemed very unwise. The dental profession of the state of Illinois has passed through four epochs. The first was the organizing of the Chicago Dental Society in 1864; this society has done a great work and the men constituting its membership have been the means of making Chicago the centre of the world in dentistry. The next epoch was the founding of the Illinois State Dental Society in 1865 by a coterie of men that stood foremost in the dental profession of that day, and from the very beginning its achievements have been great. The third epoch was the re-organizing of our State Society in 1904, by Dr. Arthur D. Black, which resulted in an increased membership of over one thousand, making a total of over fourteen hundred. Since that time it has steadily increased until it has reached a membership of seventeen hundred, and is the largest and most influential dental society in existence. The fourth epoch is the result of one man's work, the casting process invented by Dr. W. H. Taggart of Chicago. This invention makes him one of the greatest benefactors in the dental profession.

The work that we are now taking up is so great that it cannot be completed in one, two, or three years, in fact, from its very nature it never can be completed, but must be continuous. This work should constitute a fifth epoch in the history of the dental profession of our state.

Let us battle against the woes of mankind as best we can, and by opposing end them.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held March 19, 1912, with the President, Dr. G. W. Dittmar, in the chair.

Dr. Hart J. Goslee read a paper entitled "Newer Methods in Crown and Bridge Work."

DISCUSSION.

Dr. John E. Nyman:

The essayist has certainly given us a splendid and most complete presentation of the art of casting as applied to modern methods of crown and bridge work, and accompanied by the most complete and beautiful models I have ever seen, and the society owes a great debt of gratitude to Dr. Goslee for the immense amount of labor he has expended in the preparation of these models alone.

There are a few points to which I wish to take exception, and there are likewise a few points I wish to emphasize about the paper. He states that facings cemented on strongly were less likely to fracture because of the cushion effect of the cement. That is an entirely new idea to me. My experience with cement has been that it is the most rigid material we have to deal with after it is mixed and set. The attachment of the facing being stronger when the facing is cemented to the metal structure is due to the fact that when it is soldered you have two points of attachment, two points separated by the metal facing, and this area exposed to stress very much is at some distance from the attachment, so that more or less leverage can be exerted to break off a section. Where the facing is cemented on to the structure, you have attachment at all points of the facing, and it is due to this fact that the facings that are cemented on are more firmly attached.

It seems to me that Dr. Goslee goes through a few unnecessary steps in fitting his thin metal cap to the end of the root, and some time in the future I would like to give you a special clinic on adapting the cap to the root without going through all those steps.

The doctor speaks of casting pieces on to the metal cap which he fits to the end of the root. We have observed a number of times in our laboratory this, that thin metal sections when cast warp slightly; they warp sufficiently to destroy accurate adaptation of the cap, so that we have in many cases recently been casting the metal cap section, so to speak, separate from the cap and uniting all with solder, and I find my experience in that line has also been the experience of such clever men in the East as Gillette and Tracy, all of whom are clever men in a mechanical line and have had the same experience, and have adopted the method of casting metal pieces separately and soldering them on to the cap to obviate any danger of warping of these caps. In my copy of the paper Dr. Goslee spoke of constructing these caps over the ends of the roots with thirty-eight gauge pure gold. I would rather do it with tissue paper, because I would not feel I was wasting valuable material. Thirty-six gauge pure platinum can be adapted accurately and you do not have so many accidents in the necessary handling of the pieces in the subsequent construction of the work by removing the crowns from the model when waxed up. One little point put into practice by many of you every day, but which may not be familiar to all, is to take a rod of thick wax and stick it on the facing. When it cools the facing can be removed from the waxed model. Another point the essayist did not mention which, I presume, many dentists use, and that is the necessity of roughening the surface of the porcelain facing or the porcelain crown which is to be cemented to the model. It is quite essential to do that, and you have a firmer attachment, if you roughen it with discs or with carved blocks of hydrochloric acid.

In regard to bands for the roots, of course such a thing is absolutely essential if you use root abutments for bridges. I regard it as essential in the construction of crowns, for we have observed a number of bad accidents in our own experience from our own cases and in cases of others of fractures of the lateral roots, which have been crowned without using a band. It has come to be our practice to band all lateral roots and band thin bicuspids.

Just a word in regard to the saddle Dr. Goslee spoke about. A method which we employ in order to secure fairly uniform embedment of the saddle under the gum tissue is to burnish into the impression a piece of thirty-four gauge pure gold. When this is removed from the mouth, the model will be found to have scraped off to that extent in a uniform manner, and there is another little test which you can make in the mouth which will indicate to you whether you have accurately adapted all the saddle to the gum around, and that is to place the bridge in position upon the roots and hold it firmly there. If your saddle is adapted, embedded closely enough so as to exclude debris or food, it will blanch all the tissues when first inserted. Maintain pressure on that for a matter of five or six minutes, and if within that time the circulation returns there and the blanching disappears, you have close adaptation of the saddle with the tissues at that point which will not interfere with the circulation. That being the case, you are not likely to have any trouble with the saddle subsequently. If it is embedded too deeply, there will be interference with the circulation. There will be atrophy of tissue or granulation tissue, so that it will be unpleasant to the patient and a source of embarrassment to you.

I should like to emphasize what Dr. Goslee has said about not attempting to cast clasp gold. In our belief that that could be done, and in our attempt to do it, we have had distressing accidents in some cases in our office. The clasps are fractured in the mouth, and when we attempted to band them to get occlusal adaptation, they fractured, and we have had to make over a number of cases, and when we got through with them we hoped and prayed we would never see them again.

The method Dr. Goslee has outlined for the attachment of a removable piece is certainly very ingenious, and I have no doubt it is practicable. I have not seen the model yet, but I judge it is practicable from his description.

In closing, I want to express my heartfelt thanks to Dr. Goslee for having devised these crowns. So many times we have been compelled to spend a large amount of time, patience and ingenuity in building porcelain into the facings which were at our disposal, which we could obtain at the dental depot. Especially has this been true of the facings for anterior crowns. We have been compelled to bridge the root along the cutting edge on the lingual side of the facing.

Dr. Goslee spoke of backing up the facings with gold where he used ordinary facings. We have come to back them up with thin platinum, then waxed slightly, and removing the facing from the backing the little narrow crevice in between the backing under the facing and the cap on the end of the root is filled by flowing in non-expanded gold. Then the rest of it is cast in the ordinary manner.

I feel under a debt of gratitude to him for having devised these very excellent crowns.

My one hope is that he will have influence with the manufacturer to continue producing it to give adequate selection of size, shape and shade, and I cannot leave the floor this moment without uttering my heartfelt gratitude toward the man who has made all this possible after all—Dr. William H. Taggart. (Applause).

Dr. E. M. S. Fernandez:

Usually when Dr. Goslee reads a paper he leaves little or nothing to be said, but this time I am going to differ with him a little, in spite of everything. The paper is long, but it is not half as long as it ought to be, and had it been doubly as long our time would not have been wasted by listening to it.

Before I say anything in regard to the newer methods, I wish to emphasize one thing, and I do not want to be misunderstood and have you gentlemen believe that I do not approve of casting, not by any means. I wish to make this remark that casting has not displaced gold filling from my practice yet. (Applause). Certainly casting is a grand improvement in our profession, and it has a grand place in it, but it takes a skillful man to make proper use of it. Is the method of cementing teeth to bridge work better than soldering them? I believe it is gentlemen, in many ways. One of them is the ease with which you can replace them should they break after the work is cemented in the mouth. Another is the change of colors which you can produce on them before you cement them by mineral pigments and baking, and I wish to call your attention to a little method of my own in regard to choosing the color before cementing the teeth to their places. Choose the cement you believe will answer in color and mix with water instead of the cement liquid; place the tooth with this water mixture and you will see the exact color produced; should it be correct you may then clean this water mixture off and replace with the regular cement mixture; should it not be the right color, continue experimenting with water mixture until correct.

In regard to the use of full or partial bands for crown work, I would like to emphasize that by all means I believe the full band absolutely necessary in every root that is to be crowned, whether it be a lateral, central, cuspid, or any other tooth in the mouth. I believe it is the only safety to the root. I think that a partial band will not prevent cracking of the root.

In regard to the use of gold for bands, I do not quite understand why the essayist uses gold. Possibly he has some reason for doing so, but in my experience I have found platinum the best for bands. In years gone by I had quite a number of accidents in melting the gold bands after my work was completed, therefore discontinued that method. In regard to the strength of the alloy for bridge work, I differ with the essayist somewhat. I have found in my experience that a mixture of twenty-two karat gold, and twenty-two karat solder gives me the best results throughout; say four parts of twenty-two karat gold to one part of twenty-two karat solder, the larger the bridge the more solder.

The casting process for crowns and bridge work is certainly one of the grandest, newest, methods we have, and is an excellent improvement in prosthetic dentistry. We have nevertheless some difficulties to overcome yet, such as the prevention of shrinkage which is certain to take place when the investment is over dried or over heated.

In regard to the methods for making movable bridge work I will not say anything about, because it is too complicated and long a process to be spoken of in our limited time, but I will say a few words in regard to fixed or permanent bridge work. I do not approve of such work being held in place by abutments made of plain inlays set in live teeth, as the constant movement, caused by the continued mastication will certainly loosen them, and in many cases cause fracture of the teeth. I believe in devitalizing the pulp of the teeth, which are to be used for abutments, and such inlays made with posts which will go into the root canals, will furnish a much finer and reliable abutment, and I will say this, gentlemen, that now that we can by use of Radiographs make the cleaning of the pulp canals much simpler we have no excuse for making plain inlay abutments in live teeth for that purpose. The same method applies to the use of gold crowns in the human mouth, a porcelain crown made in pulpless teeth being so much handsomer and more natural looking than the gold shells or crowns that have become so common.

Dr. C. E. Meerhoff:

There is very little that I can add to what has been said by the essayist and by the gentlemen who have preceded me. All of us know Dr. Goslee and his methods well enough not to take any issue with his principles, and in a general way, the principles enunciated by him, also the doctrine as to the use of bands, seem to be correct. I cannot take issue with him in that regard, and as far as I am concerned about the only way in which I would differ with him would be in the use of platinum instead of gold. I like the use of coin gold for saddles, and five per cent. platinum for inlays but I do not use clasp metal for posts in any manner for casting. It is not good policy.

The use of inlays as abutments for crowns is commendable. but it is getting to be a rule with me when I do this, to use a loose pin in connection with it. The paralleling of walls of cavities is more difficult than the preparation of root ends for abutments, and I have found in times past that inlays made with the pins in place, could not be used after they were assembled. It is pretty nearly a regular practice with me to use the loose pin method. The use of the Goslee tooth is the greatest boon—next to that of the inlay itself or the casting method,—that has been given us, and I think Dr. Goslee would have more to say about it were it not for his innate modesty. For my part, I am saving hours of time right along, the shapes of the teeth as designed by him are the same as thôse acquired by the grinding of the Davis or Logan crowns, and I feel we owe him a debt of gratitude. The casting of gold crowns and the method of casting them, as outlined by Dr. Goslee, I approve of. The only exception I would make would be in a case where a gold crown was to be used as an abutment for a bridge. In that particular instance I like the contour from the outside of the band for stability.

Dr. Goslee's advocacy of space between dummies and abutments, especially in cases of inlay abutments, and the extension of the cavities for such inlays, is particularly well taken in as much as when that is done it gives a free space for the use of floss, in cleansing. I myself have not had great difficulty in the casting of several dummies or boxes, as I called them at one time. I prefer that to cast them singly.

I really think the strength of a bridge made with replaceable teeth does not lie in the cemented teeth as much as it does in the alignment of the teeth where you have a wedge of gold between each two teeth, and whatever stress downward or upward, is supported by the wedge of gold in conjunction with the saddle which supports the cement, and provides more stiffness than in a soldered case.

One point I think the essayist might have brought out in favoring the use of porcelain grinding surface, is the opposition of porcelain to porcelain. Such conditions frequently retard the extensive wear seen in some mouths on grinding surfaces of all of the teeth and of course is more effective in the trituration of food.

I think the essayist summed it up in a nut shell when he said he "boxes up, protects and supports," his porcelain tooth. I think in that lies the whole secret of his success.

Dr. W. D. N. Moore:

I shall not attempt to discuss this paper at any length after such masters as we have listened to, but I would like to congratulate Dr. Goslee upon giving us a tooth that is so perfect, so esthetic, and one which has such a wide range of usefulness, as he has designed. I have not seen as many samples of it as I wish to; I hope to see more, as he tells me there will be more manufactured, but it has a wide range of usefulness, and in my own practice a tooth copied very much after this mould I have used almost exclusively, and I do not see any ground for argument why it cannot be used to a very great extent, probably with few exceptions, where he spoke of the lower arch where gold might be used entirely, where it would not be seen, but such a tooth as he has designed, and the only one for casting, I feel we are deeply indebted to him, and so is the profession at large, for giving us such a tooth.

He spoke in his paper, at the outset, of a point that I always feel very strong towards, and that is the technic. The principle that he has given us is undoubtedly to my mind correct, and the only trouble that can arise is failure probably from improper technic. That is the keynote in my mind to all operations in dentistry, and especially is it true in casting as applied to bridge work, inlays, or any kind of work. If proper technic is observed in connection with this work there need not be any danger or risk assumed in the permanency and good results that can be obtained from it. In speaking of the porcelain tooth in comparison with the old style facings, I do not think it worth while to go into that at any length. It seems to me, when we use the old style facings, gold back and gold cusps, we do not accomplish one-half as much from an esthetic standpoint. We get one side similar to the tooth color, but the main part of it, probably the part most shown, tips to the buccal side, for instance, a bicuspid or molar, and the whole occlusal surface of the gold is very unsightly, not to speak of the dark color along the line between the gold and backing. The same strength together with a better masticating surface can be obtained from porcelain undoubtedly. If any of you object to that, compare and see how a porcelain surface will cut into the hardest metal surface, showing how much harder it is, and how much more surface it will add in a masticating manner.

There is one thing I am a little afraid of that may be disappointing about this replaceable tooth. The principle is to my mind correct, but there is a good deal to be done by the manufacturer. If you go into a dental supply house and take a certain mould, for instance, probably you will be shown fifty or a dozen or any number for that matter, and you will see what a wide range of size there is sufficient to ascertain it or to use it by the naked eye, showing that the manufacturer cannot or does not in all cases take out a batch of teeth of the same mould and have them all alike. If you are going to have a replaceable tooth, it should be accurate or else it is not a replaceable tooth, and just the moment you put a stone on it it may break. You cannot put a stone on the second one in case it is broken or has to be replaced. So in that respect, not with Dr. Goslee, but with the manufacturer, we are yet in trouble so far as accuracy of a replacement tooth is concerned. There are cases where the models may be as thorough and as many as possible for any supply house to give, and yet we have to grind some of them. As soon as you grind them, you have a tooth that you are going to replace which is not truly replaceable in my mind. It is an attempt at rather than an accurate replacement.

I like the point he brought out with regard to metal being adapted to the root, instead of attempting to adapt it with wax, because that cannot be relied upon, and the metal, whether it should be gold or platinum, can be adapted. The only safeguard in platinum is this, it is a little stiffer. Both should be reinforced and if reinforced either one is sufficiently rigid to insure safety in handling it. If you use platinum and solder iridio-platinum tin with twenty-five per cent. platinum solder and cast directly on it, you have no danger whatever, or should not have, in forcing any gold or driving that solder ahead of the higher fusing metal. For instance, if you solder a piece of pure gold with twenty-two karat solder, and cast on that with pure gold, you are certain, in spite of the coating on your investment, of forcing the solder through. You can overcome this by using platinum solder. It is immaterial what method you use.

I would take issue with Dr. Nyman, because I think you can drive two pieces of metal considerably apart by having sufficient heat on there and forcing the solder in. If you have two pieces of metal in contact, if you are not careful and put an excess of heat on that, and are careless with the solder, you can force enough solder in there until you expand and distort it more than in casting directly.

Dr. Nyman:

You may theoretically do that, but practically you would not not get as much distortion as when you attempt a thin section onto the cast.

Dr. Moore:

If you attempt to cast two pieces of metal of certain shape, if you would make a cone, to fit the end of a molar and cast directly over that, make a contour, if you are going to make a solid gold crown, you would distort that, but I do not believe the distortion is perceptible, so that any gentleman is able to tell us how much it is, and it is only then more or less speculation.

Dr. Nyman:

You are casting a section in there which is thick at one edge and thin at the other. It is comparatively thick at the lingual edge and thin at the buccal. You get an uneven warpage or shrinkage. That is something we have learned from sad experience, and similar sad experiences have occurred in the practice of men in the East who are as clever as any men we have in the profession in casting metals. It may be theoretically you can demonstrate it with a microscope that you have slightly warped the cast out of position when you solder it. If that is the case, you draw every bridge out of position.

Dr. Moore:

One point more: We should be more careful about the use of metals. There is too much of a tendency to use pure gold where the alloyed gold should be used. While pure gold is the ideal metal to cast to get perfect castings, yet a great deal of work and harm can come from using it in preference to alloyed gold, such as gold and platinum, and preferably gold and platinum, and the use of it must be governed more or less by the cases we have to deal with.

Dr. J. N. Crouse:

One great difficulty with the crown that Dr. Goslee has brought out so well is to get these crowns on the market and to get the manufacturers to make them in quantities. Take a certain number of a certain tooth, in the second bake some of the teeth, as they bake them, are much harder than those in the first bake. The tooth has more shrinkage and it will not fit. There will be a variation in size, and you will have those things to contend with. I know something of what a time it is to get manufacturers to manufacture what you want them to, and they won't do it. There is not profit in it enough for them. They would rather manufacture and sell teeth at a dollar a set to country practitioners and make money in that way. That will be the trouble with this tooth of Dr. Goslee's; otherwise it is splendid. If we could get the manufacturers to manufacture them in large quantities, the tooth should be used more extensively, and that is what I would expect to be the greatest trouble with it.

I am much interested in a case that had abutments for a bridge that come well towards the front of the mouth, and I would like to ask Dr. Goslee a question. Where you had a good tooth trimmed up for a band, would you cut it down and put a porcelain tooth on it?

Dr. Goslee:

I answered that in the paper, Dr. Crouse. I simply said if the remaining crown was sufficiently good and strong and could be preserved, I would put an inlay in it. If it was not, I would cut it off and crown it.

Dr. A. E. Schneider:

Much has been said this evening with reference to bands and the bad results from banding. Considering the way in which it has been spoken of, it is largely a matter of technic. I think we should give the band an inset, having it flush with the outer periphery of the root instead of having it outside the tooth itself, in other words, making a shoulder as for a porcelain jacket crown, slight in depth, into the excised root. This band can be made very accurately by casting gold to one one-thousandths platinum foil, making an amalgam model just as described this evening, swaging with the S. I. White swager one two-thousandths platinum foil over the model of amalgam, and over that, one one-thousandths platinum foil, placing the casting wax into the shoulder flush with the periphery of the root, and then casting that. The one two-thousandths platinum foil will take care of any contraction in the band of gold. You can make it with a band then as ordinarily, but we must get away from the overhanging collar around the neck of the tooth, and the way to do that is to make a jacket crown shoulder for the tooth. It make a beautifully fitting crown. As I have said, it is a matter of technic. It takes more time but makes a beautiful piece of work; one which will not result in the recession of the gum or the splitting of the root. Decidedly prophylactic dentistry.

Dr. Goslee (closing the discussion):

I am very grateful for the reception you have accorded my paper, and I am likewise grateful for the discussion which it has brought out.

Dr. Nyman made a very good point when he spoke of the relative strength to be obtained by cementing the tooth to the structure instead of having it soldered. I do not know just where I got the idea that cement affords a "cushion-like" effect, but I think that sometime in the dim and distant past I overheard Dr. Taggart use that expression, and as it impressed me forcibly at the time in this connection, it has stuck to me ever since. The explanation Dr. Nyman gave you with regard to the attachment of the facing to the structure, however, is really better than the one I gave you, and yet I do not know but that cement does afford a more cushion-like effect, because we have adhesion by contact between porcelain and gold all over the surface of the porcelain instead of an attachment by means of two pins only.

With regard to the clinic which Dr. Nyman has suggested giving, and his criticism of the technic which I attempted to give you with regard to obtaining a fit to the root, I wish to say, that I do not care what technic is employed, the main point to remember and which I desired to impress upon you is the necessity of obtaining a close adaptation of the crown to the root, and to give you a system for doing this which was simple. The construction of a crown by this method in my practice is now an absolute system. Everyone is built along the same lines, and as I told you it takes me but three short sittings to build a crown.

As to the question regarding use of platinum or gold for the base, I did not care to discuss that because all I wanted was to impress upon you this one thought: *fit the end of the root.* You can not fit it by simply molding wax to it, but I do not care whether you use thin platinum or thin gold. I want a better fit to the end of the root than is obtained by those who are trying to mold wax to it. Thin platinum is better, if anything, than gold. There is no danger of fusing the platinum when you force the molten gold upon it, but there is some danger of burning thin pure gold. If you have the flask too hot and melt the gold to be cast to a very high fluidity you may burn up the thin gold base and not have the same accuracy of adaptation. As to which you should use, however, it is adaptation you want, and we can not get that by molding wax alone.

I have been in New York as recently perhaps as Dr. Nyman has, but when he speaks of Dr. Gillette, Dr. Van Woert, and Dr. Tracy, soldering the cap which they have adapted to the root to the casting that has been made, I can not understand it. They did not tell me about it. From my viewpoint, there is absolutely nothing in it. There is absolutely no advantage to be gained. Why do you want that additional solder in between your casting and cap? Your backing is made for the purpose of obtaining adaptation, and your casting is made for the purpose of reenforcing that adaptation. If you melt gold and force it upon the backing, by casting, and if you observe the conditions I mentioned, you will get a close physical union. Shrinkage or warpage in my hands has never occurred to a degree which was noticeable. Dr. Moore has correctly stated that there is undoubtedly some little change from shrinkage, but that it is very small. It does not do any harm in the average case in my hands at least, and why I should make my backing and casting separately and unite all with solder, I can not understand.

Dr. Meerhoff referred to the use of posts in inlays used to support fixed bridges. It has been one of the hardest things I have ever tried to make other people believe—at least some other people I know—to always have some kind of pin or post in every inlay which is to be used as a support for fixed bridgework. Why they hesitate to use posts, and why they fail to realize the necessity for them, I am at a complete loss to understand. A great many claim their use is unnecessary, but in my opinion they are absolutely essential, and I would even go as far as Dr. Meerhoff, or, Dr. Moore, following him, and have that tooth devitalized and get a post in there so as to be sure it would not permit of the inlay becoming loosened from the terrible stress brought upon it in after years from the force of mastication. I have seen but few teeth in my practice where I did not have to devitalize them for the reception of an inlay which would be of proper proportions to insure an adequate degree of strength for the support of fixed bridgework. In elderly patients, where there is a recession of the pulp, two or three short small pins may be used without encroaching upon the pulp. In such instances I would perhaps conserve the pulp, but the primary point I want to emphasize is to always obtain an attachment which will insure a greater degree of security and stability than just the inlay itself. In all of the ten anterior teeth devitalization will probably be demanded quite as often as the crowning of the tooth itself.

The use of separable posts suggested by Dr. Meerhoff, and shown before by Dr. LeGro at the recent clinic, is an excellent idea. I have not used the idea as much as I should, but there is one thing in its favor. If you make a box as he suggested, and then go ahead and make the inlay, you never have any difficulty in mounting the bridge; it goes to its place readily, and the pins can then be easily adjusted to position and the joint between the platinum box which engages the posts is just as close as is the joint between the inlay and margin of the tooth, and you have the advantage of easy adaptation of the bridge in mounting it and successfully locking it into place by the separable pins which may not be always possible if you use a fixed pin as an integral part of the inlay.

I am sorry to hear Dr. Meerhoff and Dr. Fernandez speak of casting backings for two or three teeth together. It is wrong. This element of shrinkage or warpage is one of the principal reasons why it is wrong. I have tried casting three teeth in one piece, having the teeth backed up with pure gold, often, but invariably one of the three porcelain teeth had to be ground in order to get them back in the casting. They can be cast separately, however, and when soldered together afterwards the fixture will be stronger; there will be less stretching, you do not display so much gold, and you never have any difficulty in cementing the teeth to place, and these three advantages make it, in my mind, a very much better procedure than to try to make the casting all in one piece.

Dr. Moore and Dr. Crouse spoke of the variation which takes place in the fusing of porcelain teeth. I am quite well aware of the fact that no two teeth are ever identically alike. They are made in master molds of the same size, but if a hundred teeth all baked in one tray came out all alike, it would be marvelous, because those in the center of the tray would be fused more or less higher than those around the edge. There is a slight variation, but I have not claimed that this tooth was absolutely interchangeable and replaceable. It is as nearly so as it is possible to obtain in porcelain teeth without a ground surface, and the manufacturers will not give you a porcelain tooth with a ground surface. Even if they did you would have to change the surface a little anyhow, in every case.

With regard to the manufacturers, they have promised me to keep on adding to the molds as rapidly as they can. They have one hundred and eight different molds now. The anterior teeth were promised early in March but they are not yet out. We must be patient. When the first lot are out they will add to the number of molds by degrees. If dentists take kindly to them it will be to their interest to increase the number of molds and give a selection and variety which will meet the demands and requirements.

As to making an inset band, I think it is an excellent idea in many cases. Of course, there is objection to it, in that the more you cut away from the tooth the less you have left of it. When you cut a shoulder around the periphery, and enlarge the canal, you of course have that much less tooth structure left.

Dr. Schneider spoke of cutting this shoulder. It is an exceedingly difficult thing to cut a shoulder around under the gum and get it right, and after you have done it you are not sure of the relationship of the edge of the band which is to approximate the edge of the root any more than you are that the edge of the thin pure gold band, which telescopes over it, is going to fit. The reason I use a thin gold cap is that the thinner it is, the surer I am to get it in close contact with the root itself, and if previously swaged and then burnished the joint will be better, I believe, than to drive a heavier or thicker band over the *inside* of the peripheral outline, and you will not be sacrificing so much tooth structure in doing it.

One of the speakers asked why I used a wire to unite two abutment pieces, and what would be the result if the case was worn four or five years. I have cases in the mouth that have been worn four or five years, and I have not noticed any apparent change. If you unite two abutment pieces with twelve gauged wire, you must be sure that those two abutments and the wire take up the stress of carrying the piece, thereby relieving the soft tissue underneath. Dr. Haskell and others have been telling us for years about the influence of mobility upon the soft tissues and that this mobility is the cause of absorption. When we have the removable part resting upon the fixed part of the bridge, we know that there is no strain upon the gum itself, and therefore, no stimulation to further absorption.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held January 9, 1912, with the President, Dr. J. G. Reid, in the chair.

Vice-President, Dr. L. L. Davis, occupied the chair while Dr. Reid read a paper entitled "Drug Habit in the Treatment of Dental Lesions."

DISCUSSION.

Dr. George W. Cook:

This is a subject which interests every one of us, more or less. We all hear a great deal about remedies for this and remedies for that disease, and really, when we come down to remedial agents, we have to go back to the sound principles of some technical surgical work before we accomplish anything. I would not be in favor of abandoning all drugs as therapeutic agents, on the ground that many of them are used empirically, because some of them do good. Therapeutics is more or less empirical all through the category of the healing art. Of course, if we are going to apply scientifically a remedy for the relief of disease or to heal disease processes, we must understand what the disease is in the first place.

I think we can safely say that, for at least about fifteen years now, there has not been a single step in advance in dental therapeutics. When I say this, I do so advisedly, and I mean in the teaching of therapeutics. From my point of view, we have had one book published on dental therapeutics that is based upon scientific principles, and if I were going to offer a criticism of that book, I should say that the author has not adopted a proper classification of diseases as well as the remedies for them. I refer to the book of Dr. Prinz, of St. Louis. He has published a book that has been to my mind the only great advance in dental therapeutics. When I say dental or scientific therapeutics, I mean a book that is based on pathological conditions. Dr. Prinz has had the misfortune, however, of not classifying his work. If Dr. Prinz had had the old classification of Dr. C. N. Pierce, of Philadelphia, of fifteen or twenty years ago, in my judgment he would have produced the best book that has ever been published on dental therapeutics, because he has had the scientific end in view as well as the proper agents to apply.

Perhaps the majority of the dental profession misconstrue what therapeutics means. They think that an agent must be a specific for a disease that they apply it for, and that is scarcely true of any therapeutic agent. In my early entrance into the dental profession, I remember very well hearing Dr. John J. R. Patrick make the statement that there were only two specific agents in therapeutics in the treatment of disease, and these were quinin for the cure of malaria, and sulphur would cure the itch, and so far as he knew those were the only two remedies he could rely on absolutely in a therapeutic way.

There is much that might be said relative to the subject, and particularly a study of the action of drugs as indicated in the paper; a study of the actions of drugs upon the living cell or cells in order that we may know what their action is in diseases. In the pharmacological treatises by some authors, especially by Cushny, the statement is made that a drug is not expected to cure a disease, but it is to relieve or to assist nature to return to health, and that is all we can hope for.

The essayist says that no one has as yet discovered any cure for pyorrhea alveolaris, and I do not believe anybody will discover any therapeutic agent that will cure pyorrhea alveolaris *per se*. There are many agents I think that do good in the treatment of pyorrhea alveolaris, but they only accomplish as therapeutic agents what they are intended to, namely, to relieve or to assist nature to bring about a normal condition.

The dental lesions that we treat ordinarily are peculiar. The general condition and the local condition are also concomitant. I do not believe that there is a cell in the body that ever becomes affected that does not affect some other cell of the body, and I do not believe there is any local lesion in the mouth or about the peridental membrane or the pulp of a tooth that does not influence the general condition of the body. It is so in other things. The smallest pimple on the skin sometimes produces a very considerable general disturbance, and I do not believe it is possible in the physiological environments of the mouth and the lesions that appear in the mouth for them not to affect the general conditions of the body. On the other hand, there is not a single condition in any other part of the body, a lesion, no matter how slight, that does not affect to some extent some of the local conditions found in the oral cavity.

Some years ago I happened to know a gentleman who had the misfortune to have an accident. He broke his arm just above the wrist joint. Soon after the arm was broken he developed ptyalism. The saliva began to run, and both his friends and the family physician insisted that he must have mercury in his system; that he must be taking something of a mercurial nature in order to have such profuse ptyalism; but it developed that the saliva began to subside, as did also the ptyalism, as the lesion in the arm began to grow better. His gums were swollen at the time, and he was quite considerably disturbed in mind. There was a nervous condition brought on by an accident, and if a thing of that kind can occur in a healthy individual, why would it not be possible for almost anything to produce some unusual conditions, and while the essayist brings up the point of the drug habit, I believe that is too largely true. Some one suggests a remedy for this disease, and some other person a remedy for that disease, and they try it on the dog and then on the human being, and finally when both dog and man die then they wonder what is the matter. We base all of our therapeutics too much on what somebody else has said; on what Jones has said about this or about that; we take it as a cold fact that this or that particular remedy is the one to use because somebody recommended it, and that is one of our misfortunes in therapeutics. What we need in therapeutics is a more careful study of cell life and its deviation from the normal and the real physiological action of drugs as applied to therapeutics agents.

I want to say, that Dr. Reid has struck a very vital point in my mind in discussing therapeutics in the manner in which he has. We want a more scientific study of the subject, and we want less opinions about drugs. We may as well pray as to take drugs without knowing what we take them for.

Dr. J. E. Hinkins:

I think Dr. Reid's paper is timely, and I think we are all prone to use more drugs than are absolutely necessary for the comfort of our patients and for the comfort of ourselves.

Ten years ago I used to have more drugs in my medicine case than I knew what to do with, and when a patient presented himself or herself, as the case might be, the first thing that I wanted to study was which drug was a specific for this specific case. I got into many troubles, but as I have grown older and have been trying to learn about the physiological action of drugs and pathological conditions, I have cut down my chest of medicine very materially, and I am happy to say that in the last five years that my practice has been much more gratifying to my patients and to myself. I use very few specifics and have gone back largely to a good many old stand-bys and do not use so many nineteenth century specifics which we hear of daily and read about in our dental journals, namely, this and that drug, and so on.

I was much pleased to hear what the essayist had to say with reference to the treatment of pyorrhea alveolaris, namely, that if he removed the deposits carefully and knocked off the corners of the alveoli, and washed out the parts with a normal solution of sodium chlorid, he got good results and did not need to give the teeth much more treatment after that. I have used this solution with very gratifying results; I have also used a solution of carbonate of soda with equally good results. A few years ago I used to apply in such cases escharotics and astringents, and so forth, around the pockets of pyorrhea, and after I had removed these deposits, in two or three days I would have acute inflammation set up there, and probably before I got through with the case I would have to devitalize a pulp or extract a tooth before the patient was really comfortable. But I do not have so much of that trouble any more with the aid of prophylaxis.

While prophylaxis is not quite germane to the subject of the evening, still it is indirectly. It is surprising what action we can get in blind abscessed teeth, where we have the face swollen, with pus or the exudate extending down through the pulp chamber, and there is no opening, from the proper application of remedies, particularly where the indications are such as not to warrant lancing. If you will open such an abscess and wash it out with carbonate or bicarbonate of soda, or any of the other saline agents, and then have the patient massage the parts gently with the finger, in order to get up a good circulation around there, you will be surprised at the excellent results. In some instances it may not be necessary to open the abscess.

A lady came into my office today who had been up all last night. I opened into the pulp chamber. There was considerable gas in there, and pain was very intense. There was no pus. I applied hot applications of carbonate of soda, massaged the gums freely, called her up on the phone before I came to this meeting, and she informed me that the pain had subsided. Whether the massaging of the gums helped the lymphatics to carry off the infective material there is a question. Five or ten years ago I would have doped the gums with iodin or with menthol, or any old agent that would have made it more sore than it was; but today that is not my method of practice. I have a physician who shares the office with me and we very frequently discuss these things, and his observation is that we should not use any remedy if we can help it that will destroy the cellular tissue faster than the disease will itself, and I think that is sound advice to work on, and about ninety-five per cent. of all our remedies will destroy cellular tissue faster than nature will tear it down or build it up.

I have enjoyed the paper very much, and I wish to thank Dr. Reid for presenting it.

Dr. Elliott R. Carpenter:

I was very much pleased with Dr. Reid's paper and with the attitude which he took in regard to the use of drugs. I think probably my experience has been the experience of most of you in early practice. I had more drugs at one time than I knew what to do with, and I have gradually eliminated them until I have come down to a mere handful, and during that process of elimination I have been impressed with the imperative necessity of not only surgical cleanliness, but also exact manipulation, especially in regard to the treatment of putrescent pulp canals. I am a little inclined to take issue with Dr. Cook relative to his statement that there has been no advance in therapeutics in fifteen years.

There is one gentleman whom I might mention, who has given the dental profession a great boon, and which is a great advance in therapeutics, and that is Professor Buckley. He has given us the remedies of formalin and cresol, and with those formulas he has given us the therapeutics and pathology of what takes place. It makes the pulp contents absolutely inert for the time being, and I think that is quite an advance, especially in the removal of the contents of putrescent pulp canals, which is not so apt to be harmful if a little is forced through the apical foramen. I simply take the results of my own practice in regard to these formulas.

I think Dr. Cook has sounded the keynote of our future progress when he says that there should be a more intelligent study of cell life, on which I think we as dentists are very lame. I know I am.

Looking back over the past history of our profession and the medical profession, I cannot help but feel that all the professions of the healing art, especially medicine, owe quite a debt of gratitude to the Christian Scientists, as I think they have been the means of suggesting the possibility of doing away with the use of a good many drugs.

There is practically nothing more I can add to the subject other than to thank Dr. Reid for presenting his paper and to say that I have enjoyed it very much.

Dr. F. E. Roach:

Dr. Reid promised us that he would not give us much of a paper, and while it has been very short, there is a lot in it. It is right to the point. It is practical. Personally, I am a believer in short practical papers right to the point.

He did not cover the whole subject of therapeutics, but discussed the subject in a practical way. That is a feature of the paper that appeals to me; it is something we can take hold of. There is no doubt in my mind that all of us at some time or other have been guilty of over-doing and of over-using the drugs at our command. I know I have. My father was very much opposed to the use of drugs. He had an inherent abhorrence for drugs, and I have always had it myself. I had it instilled into me when I was a child, that drugs were poor things to take into your system. They were poisonous.

The paper appeals to me for the reason that it brings to the notice of the profession the habit that we are getting into of wanting to dope every case that comes to us for dental treatment. As compared with the medical profession, our practice of therapeutics is almost wholly mechanical or surgical, if you please. Of course, it is necessary for us to use some drugs. There are certain conditions which call for the use of drugs to assist nature in her recovery, but the majority of our drugs in the treatment of dental lesions are really unnecessary; that our work is largely mechanical, and being of such a mechanical turn of mind myself, I try to treat all diseased conditions that come into my hands in a mechanical way, and consequently my drug outfit is very limited; and while I may be practicing with a too limited number of drugs, at the same time I believe I have reasonable success in practice and without the use of very many drugs.

It was especially pleasing to me to hear what Dr. Reid had to say with reference to the treatment of pyorrhea. We all know that we have had hundreds of remedies offered to us as specifics for this disease; we have tried them and found them wanting. We have done it because possibly we thought maybe that this or that drug would be the drug that would help us out. We have done it in despair. We have been stranded in grasping at the straw that we thought would save us. We have done it for a reason when we should not have done it, and we are too ready to use drugs on patients for the effect they have on them and because people expect us to use drugs. There was a time when people did not think much of a doctor unless he prescribed drugs very freely. But the people today are educated and they do not expect to be drugged as much as they were formerly. People used to think that a doctor was no good, or he was not a good physician, unless he gave strong drugs, and for that reason we have been led into the use of drugs when we conscientiously in our minds did not have much faith in them. We know this is likewise true of the medical profession. The better men in the medical profession are not using very many drugs today. They are using common sense and trying to correct diseased conditions that exist in their patients by helping them along.

Dr. Carpenter in his remarks stated that the Christian Scientists had helped in bringing to the notice of the medical profession and of the dental profession, as well as the public at large, that we could get along without the use of a great many drugs. I think Christian Science has been the outgrowth of public sentiment. I do not believe Christian Science has been instrumental in bringing to the notice of the medical profession the lack of need for medicine so much as Christian Science has been the outgrowth of a sentiment against drugs by education. Undoubtedly there is no necessity for the use of so many drugs.

I am sure we are to be congratulated on having this practical subject brought before us in this way, and that we will all be benefited by Dr. Reid's paper. I have enjoyed it immensely.

Dr. L. L. Davis:

After what has been said by the various speakers at the table, there is very little left for me to say. The essayist has voiced almost exactly my standpoint in regard to this subject. For a number of years I have fought against the use of drugs, more especially in the treatment of pyorrhea alveolaris cases, and I have said on a number of occasions that surgical cleanliness would do more than all the drugs put together that are used for that purpose.

Last year a gentleman gave a table clinic, and he had fifteen or twenty different kinds of drugs in different bottles which he used for the treatment of various cases of pyorrhea. It struck me as being a very ridiculous exhibit. Here was illustrated the idea of treating the tissues without removing the cause.

As to the new solvent which has been introduced to the profession, I know little or nothing about it, but it is said that all you have to do is to put it between the gums, and the deposits will melt away and the tissues become healthy. I have heard several speak of it. I do not know what it is. It has been introduced within the last month or so.

At the present time I rely upon the use of an instrument for removing the deposits in cases of pyorrhea. The one thing above all others of late years that has helped me has been the changing from the use of pyrozone or peroxid of hydrogen to the use of saline solution, not that I am ready to believe, as some of our members state, that peroxid of hydrogen and pyrozone are the worst agents that one can possibly use. I cannot think that yet because I feel that I cannot get along without them, and particularly peroxid of hydrogen. I cleanse teeth with it. I use it in polishing teeth and in cleansing the cavity before I insert a filling. I use it in every operation I make. I use peroxid of hydrogen in some form before I use alcohol. I do not pump it through into blind abscesses like I have heard of some dentists doing; neither do I inject it into pyorrhea pockets as I used to do, and the late Dr. Harlan was the man who suggested the use of it in that way.

In the last year or two I have been using a solution of iodin in certain infectious diseases of the gums and jaws where I wanted to wash out pockets thoroughly. I follow the saline solution with a solution of iodin in water. I do not know where I got the idea, but I have used iodin for some time with very good results, and while I may change my mind later in regard to it, at the present time I am using it with very gratifying results.

A patient came to see me with infection of the neck, extending back into the throat, so much so that I thought she was going to quit breathing very soon. Hot applications and other things I tried did not seem to have any effect after twenty-four hours. For two days and nights that patient suffered the tortures of the damned, and I could not see any place to lance or anything to do, and was ready to throw up my hands in despair when I found a place from which pus was oozing from behind a non-erupted third molar, and I know that this pus pocket must have extended away down in the throat because the patient said that the discharge came into the throat because she would cough up blood. Besides this, there was an exudate above the gum. When I injected the iodin she would strangle. She could scarcely open her mouth. With a long gold-pointed syringe I managed to introduce medicine underneath the flap of gum, and the first thing the patient would gag. There was a case where something more than saline solution was indicated, because there was septic infection that required some powerful germicide to overcome it.

I know of nothing further that I can add to the subject. I think the paper is timely, as we all know that the drug habit has extended to the laity a great deal, and that we are preaching continually against the use of drugs, and many of the mouth washes that are in use ought to be condemned. How little we countenance mouth washes at the present time, where we used to recommend them on all occasions. I think the paper is right to the point and up to date.

Dr. George W. Cook

I would like to offer a suggestion to Dr. Davis. I would suggest that he take a saturated solution of potassium iodid and put into that the iodin crystals and use it as a solution for the cases he mentioned.

My experience and experiments have been to this effect, that iodin is one of our best antiseptics in dentistry. Of course, we cannot use iodin in pulpless teeth where we are going to save a crown because of the discoloration that is found to take place later on in the tooth due to the iodin. You can use it there sometimes for the time being, and if you use an aqueous solution of ammonium in some form, or the spirits of ammonia, you can decolorize the iodin and get rid of it. But there is no specific effect in using normal salt solution as an antiseptic. It is simply a cleansing agent and stimulating to a degree. On the other hand, iodin is strongly antiseptic in such cases. If you give iodid of potassium, I think you will get better results than you will in any other way, and not do any more harm to the tissue. The practitioner has to be guided by the general pathological conditions that are present. If you have an extensive infiltration, with a great deal of swelling, and a kind of soft, pulpy mass of the swollen parts, if you keep injecting and forcing in there iodin you may get iodism to a slight degree, but there is not very much danger of that, even though you have pumped in a great deal of it. There is that possibility about it, however.

Glandular tissue is especially susceptible to iodin. Iodin is taken up largely, and that is what makes iodid of potassium a good remedy in many diseases of the oral cavity. It is considered likewise a valuable remedy in the treatment of syphilis conditions, and some recommend it very highly in tubercular lesions of various kinds or in cases of pus formation anywhere. It certainly has a beneficial effect in that way, but it all depends upon the conditions that you are going to treat. If you have a large infiltrating mass of tissue, and it is soft to a degree, if you can put something in that tissue that is slightly stimulating, as well as antiseptic, you achieve the results which you could not obtain otherwise.

Dr. Reid (closing the discussion):

I grant you that I would like to have said a good deal more on this subject. The more I thought about it, the more I began to realize that I attempted to write on the subject in too short a time. I had in mind some statistics which I would like to have incorporated in this paper, but I did not have the time to collect them. There are really some very wonderful and interesting statistics that could be brought to bear on this subject that would interest you very much.

If you stop to think of the numbers of drugs that the average dentist uses—and I am an average dentist myself—in the treatment of diseases of the mouth, a wagonload would not hold them. There is not a drug that the dentist uses, with possibly one or two exceptions, which is not of a very irritating and very poisonous nature—not one. You can go over the whole category of the dental case, and except in rare instances the drugs found there are absolutely poisonous, and when they are used they do not do anything except to continue the irritation you use them for. It seems to me, the average dentist does not know what he uses this or that drug for. He has not the slightest notion about his drugs.

The teaching of therapeutics is nothing but a mere film of teaching, so to speak. Take the Dispensatory or some other text-book and go over the whole line of drugs with the student, and he goes out of a dental college with absolutely no information about any one drug. My experience in the examination of students in my state board work, when I had the subject of therapeutics to handle, was a revelation to me. I was most wonderfully surprised at the little information that the students could give me relative to any simple drug I would ask them about. Seventy-five per cent. of those who came up for examination could not tell what certain drugs were used for intelligently.

Pathology is very superficially taught in our dental colleges. Of course, it is a dry subject to the student. He is not interested in it, and the same holds true with regard to materia medica and therapeutics. The professor goes over this subject, but it is dry, and therefore the students do not get it into their systems. They do not understand it. They do not grasp it. The teacher under such circumstances loses interest in the subject and goes over it superficially. I am satisfied of that from experience. When I speak of dentists I include myself as much as anybody. I do not berate anyone's information about it, but it is a fact that we do not receive a fundamental education when we start out to practice. We have a wrong basis in starting, and the result is we are treating patients with drugs which we use empirically, because we have not the foundation laid to receive our information relative to the thing The dentist does not need more than four or five drugs in his case for the every-day needs. Four or five drugs will completely fill his case, or will be as much as he will have occasion to use.

I have cured innumerable abscesses by cleansing them with distilled water. I have done it time and again with washing and cleansing. It is nothing but mechanical cleansing, that is all. They get well after this treatment. You do not have any more infection. I have treated a number of abscesses within the last five or six years with nothing but cleansing the canal, with a thorough flushing of the canal with distilled water, washing out the sinus and canal, and then treating the roots of the tooth once only, and filling it.

LA CROSSE DISTRICT DENTAL SOCIETY.

CLINICS GIVEN AT THE THIRD ANNUAL MEETING, FEBRUARY, 1912.

THE APPLICABILITY OF THE DAVIS CROWN AND THE GOSLEE INTERCHANGEABLE CROWN AND BRIDGE TOOTH TO MODERN SANITARY BRIDGE WORK.

DR. H. H. HANCOCK, Bloomington, Wis.

The clinic consisted of a six tooth bridge with two abutments and one pier; the abutments being a Davis Crown with a cast base on the upper left central incisor and a shell crown on the upper left first molar. The pier was a Davis Crown with a cast base on the upper left cuspid.

The method of attachment by soldering the Davis Crowns together was made easy and practical by grinding a triangular depression on the proximal surface with the base to the gingival to accommodate a cast flange in continuance of a cast base, thus insuring ease in soldering and added strength to the piece by boxing up the crowns.

Goslee Crowns and bridge teeth were used to fill in the space of the extracted bicuspids and were so constructed that their cast bases rested firmly upon the gums, thus giving these dummy teeth their full lingual contour from the gum line, so necessary to cleanliness and comfort. The bases were cast so as to rest as a small saddle snugly against the gums and thereby precluding any debris accumulating and acting as a breeding place for microorganisms.

The lateral incisor dummy was a Davis Crown with the proximal surfaces ground with a triangular depression to receive cast flanges, as it were, from the cast base to give attachment in soldering to the abutment and pier. The cast base was formed as a small saddle resting snugly upon the gum and reproducing the full lingual contour of the missing tooth.

The clinic was given to show the comfort and cleanliness that may be obtained from bridges that reproduce full lingual contour and leave no large open spaces under the dummy crowns for the accumulation of food debris.

ORTHODONTIA AND ORAL SURGERY.

Dr. A. T. Rasmussen, La Crosse, Wis.

Oral Surgery. Case: Necrosis of Right Superior Maxillary Bone Involving the Maxillary Sinus.

History: Patient presented to his family dentist in August, 1911, with sinus discharging over the upper right second molar. Case was diagnosed as an alveolar abscess and the tooth opened, the canals treated, filled and patient dismissed. Shortly after this the sinus was again established and all efforts to close it proved of no avail. The ends of the buccal roots were then cut off, but still the sinus would not close and case had been under treatment constantly since, until about February 1st, 1912, when patient was referred.

Operation: The tissues being thoroughly anesthetized with a local anesthetic, the knife was inserted into the soft tissues over the apices of the roots of the third molar and a cut made to a point over the apex of the cuspid root. The periosteum was raised, exposing the bone. The second and third molars being loose, were removed and all necrosed bone removed with the curette. With a large bone cutting bur the edges of the bone were rounded and smoothed off. A large opening into the maxillary sinus was found and the edges of this were also curetted and the whole washed out and packed with iodoform gauze.

Patient seen February 22nd and the operation is a success.

ORTHODONTIA CASES.

The plaster casts of several cases were shown; also patients who were undergoing treatment.

Object of clinic was to show the advisability of early treatment and cases were shown before treatment and after in which results had been obtained which would have been well nigh impossible at a more advanced age. This was especially well shown in a case of retrusion of the lower jaw, undergoing treatment, in which the patient, a girl of seven years and six months, was present, wearing an appliance, the principle of which is the intermaxillary force.

Dr. W. M. Colleran, La Crosse, Wis.

Clinic: Investing wax model first with Ideal Investing Material. Let it set ten minutes, then pour flask full of any investing material. No bubbles form on surface of model.

Result: Clean surface inlay.

TELESCOPE CROWN FOR SHORT MOLARS OR BICUSPIDS.

Dr. Adolph Gropper, Milwaukee, Wis.

A 32 gauge band burnished to tooth to cover from masticating surface to largest circumference of tooth, swage cusp to telescope band, solder cusp to telescoped band.

PERFECT FITTING CLASP.

A 36 gauge platinum strip burnished around a tooth at line of clasp, adjust a narrow strip of clasp metal over platinum, wax the two together, invest and solder.

PROTECTED STEELE FACING.

Grind bevel, the Steele facing at cutting edge, same as in ordinary pin facing, adjust backing by bending to fit beveled facing, adjusting lug on backing so as to allow facing to slide into place, solder narrow strip of gold across back of backing at cutting edge, wax to place and solder.

MAKING AND SETTING A PORCELAIN CROWN.

Dr. H. O. Larrabee, Winona, Minn.

Showing rigidity, adaptability, absolute absence of irritation of the gum tissue, ease of manipulation, ease of renewing crown in case of breakage, maximum fee for minimum amount of time spent.

METHOD OF REMOVING AND REPAIRING SHELL CROWN WITHOUT MUTILATING IT.

Dr. R. T. Case, La Crosse, Wis.

With a round bur drill through the side of crown near the occlusal and remove a good portion of cement; pass through the opening an old excavator slightly bent, pry off crown, using end of root as a fulcrum, select sprue wire to fit hole in crown and invest wire and make casting. Insert end of casting in hole in crown, place small piece of solder inside crown on end of casting—turn flame on to casting until solder flows, cut off casting and polish.

RESTORATIONS WITH WESTON'S METAL.

Dr. W. J. Phillips, La Crosse, Wis.

Showing a few large restorations using Weston's Metal, also porcelain crowns using Weston's Metal as cast base.

A GOOD AND EASY METHOD OF BACKING UP STEELE FACINGS.

Dr. F. S. Waite, Blanchardsville, Wis.

Invest Steele facings in a pad of modeling compound, back exposed. Cut piece of 22K gold plate size of backing wanted, cut small slit in plate to correspond to slot on facing. Cut small square of platinum foil and bend over root canal plugger and slip into slot in facing. Slide the piece of plate to place, open up the foil and work in a couple of pellets of gold foil to hold platinum foil in shape. Hold parts together with small piece of wax, remove from model, paint back with a little investment, let dry, melt off wax and solder.

REMOVABLE BRIDGE WORK.

Dr. R. R. Schaettle, La Crosse, Wis.

Case: Loss of lower molars on either side. Replacement by use of Roach attachment to gold crowns on the bicuspids and lingual bar, practically making an immovable restoration when in place, yet removable for cleansing.

SOMETHING IN BRIDGE WORK.

Dr. C. L. Anderson, Tomah, Wis.

Bridge to overcome the difficulties encountered in converging and diverging roots.

IMPRESSIONS AND ARTICULATIONS IN BRIDGE WORK.

Dr. R. W. Baldwin, Viroqua, Wis.

A combination impression and articulation in plaster in bridge work, using the Detroit Dental Mfg. Co.'s bite-impression tray. Also showing larger trays enabling you to take in half of the arch.

FRACTURE OF MAXILLAE.

Dr. G. F. Hauser, La Crosse, Wis.

Two interesting cases of fracture of the maxillae were shown at Dr. Hauser's clinic. Both of the patients were railroad employes and one of them was presented for treatment at the doctor's office the day of our meeting.

The first case presented a number of complications. The patient, a switchman, was struck by a piece of broken timber while poling a car. His lower jaw was fractured between the left cuspid and lateral. The lower incisors and cuspids were broken off, and the alveolus so shattered that it was found necessary to remove the remaining parts of the roots. The injury to the upper jaw was such that only three teeth on the left upper side could be saved. The upper right first molar had been driven up and completely buried in the antrum. The fracture of the lower maxilla was reduced and held in place by a splint consisting of gold bands around molar and bicuspid on the right side, and two bicuspids and molar on left side—all united with heavy gold bars. This had been cemented into place.

In the upper jaw, the molar and pieces of process were removed from the antrum and the cavity properly irrigated for some time. When the case was shown at the clinic some five or six weeks after the accident, the fracture of the lower maxilla had united, the opening into the antrum was closing, and the torn and lacerated gums were healing nicely.

The lost teeth and parts will be replaced with artificial substitutes later. Dr. Hauser hopes to show the case at a future district meeting.

The second case was a simple fracture. This man was lowering a car with a jack when something broke; the handle of the jack hit him back of the right ear and on the angle of the jaw, fracturing it through the medium line between the incisor teeth. There were not any teeth broken off in this accident and, as the patient had all save one of his lower teeth, it was an ideal case for the use of the Knapp regulating appliances. Dr. Hauser placed a No. 51 molar band on each of the first lower molars and a No. 46 bicuspid band on the first bicuspids, then inserted a No. 35 arch bar in the slots of the bands and, with a wrench, tightened up the nuts on the arch bar. This brought the parts into position and held them there. The appliances were removed three weeks later, the parts found completely united and patient was discharged.

Dr. C. H. Farrand, La Crosse, Wis.

A method of anchoring inlays in molars and bicuspids for bridge work, consisting of a short piece of platinum wire with a piece of gold plate soldered to one end to make a head on this pin. This pin is placed head down in the pulp chamber and cut off the proper length and wax pattern made and removed with pin attached to it. Inlay is cast with pin in it so that when in position it extends down into pulp chamber.

Perfectly fitting posts for splints, etc., were made by making roll of platinum foil over root canal plugger and inserted into canal, the end opened or flared out upon the surface and the whole filled with solder.

Dr. P. C. Curran, Melrose, Wis.,

showed some very interesting practical cases of casting as applied to crown work. One case was a shell crown which had been removed and a porcelain facing placed in position, using the casting process to accomplish this.

Dr. E. A. Gatterdam, La Crosse, Wis.,

showed his method of casting aluminum plates. The plate cast was an extremely large one, but was perfectly cast.

Dr. Henry L. Banzhaf, Milwaukee, Wis.

This clinic consisted of a method of making a splint for loose lower incisors by casting a splint to fit cavities prepared in the lingual surface of the teeth, using two small platinum pins in each tooth, one near the incisal edge and the other near the gingival. The clinician gave credit for the idea to Dr. H. B. Tileston, of Louisville, Ky.

Dr. J. A. Kjelland, Lanesboro, Minn.

Showing the use of the three-quarter crown and inlay in making bridge work where only one tooth is missing. In this method the buccal surface of the bicuspid is left unmolested while the lingual and proximal surfaces as well as the lingual cusp is ground off, a distinct shoulder being left at the gingival, and parallel grooves made from occlusal to gingival on the proximal sides and these grooves carried over the occlusal surface to where they meet, making a continual groove from the disto-gingival to the mesio-gingival margins or shoulder. A restoration is then cast in gold and this used for the abutment for bridge, while a mesio-occlusal inlay is used for the abutment in the molar.

The clinician also showed a method of taking the bite and impression for bridge work, in plaster, at the same time.

THE DENTAL REVIEW.

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EDITORIAL.

THE ROSENWALD PHILANTHROPY.

Mention has been made in this journal of the endowment of the Forsyth Dental Infirmary in Boston for the care of the teeth of the children of that city. A model of this beautiful structure was brought to Chicago at the time of the Pedagogic meeting in January last, and after the meeting, through the kindness of Dr. E. A. Johnson, who had it in charge, it was loaned to Chicago for exhibition. The management of the Marshall Field Company made a radical departure from their usual custom and permitted, with the most gracious courtesy, the exhibition of the model in their rest room on the third floor, where it was displayed for several weeks. It created a great deal of interest and excited much admiration.

The Public Service Commission of the Chicago Dental Societies has been trying ever since its appointment to raise funds for the purpose of carrying on this work in Chicago, but with the idea of proceeding along somewhat different lines from those outlined for Boston. In the latter city there is to be one central infirmary to be maintained indefinitely by the philanthropy of the Forsyth brothers. This plan of a single large infirmary was probably best for Boston, but in Chicago the conditions are different. This city covers such a vast territory, with so many diversified interests, that it was felt that even if the money could be raised a single central infirmary would not adequately meet the situation. The great need was for the establishment of various infirmaries in different sections of the city, and these to be located for convenience and for other reasons in the public school buildings. Not only this, but it was the conviction of the commission that the ultimate maintenance of this work belonged not to private philanthropy, but to the city or state itself. No private individual should ever be called upon to bear a burden which properly belongs to the community, and yet it seems to be the history of all these movements that they must first be started by private funds until the fact can be demonstrated to the civic authorities that the maintenance of health among the children is a real economy and should be assumed by the community. To establish these infirmaries and prove their value has been the aim of the Public Service Commission, and up to date three such infirmaries have been started. The Odontological Society began the first one at the 93d Street School, with a double equipment furnished by the generosity of the dental supply houses. Two others have been equipped by funds raised by private contribution—making four equipments in all. The work at these infirmaries has all been done by volunteer service on the part of members of the profession, but the waiting list of patients has not only taxed the energies of those conducting them, but has proved conclusively the inadequacy of the number of infirmaries.

These facts having been called to the attention of Mr. Julius Rosenwald, he most generously volunteered to equip six additional infirmaries, making ten in all, and to maintain the ten with salaries to operators aggregating $10,000.00 per year till such time as the city can be induced to take over the work.

This we believe to be one of the most beneficent philanthropies that Mr. Rosenwald has ever fostered, and, be it said, he has stood sponsor for a great many. It places the movement on a permanent basis, with the direct object of turning it over to the city as soon as the council can be made to see that it is not only a civic duty, but a civic economy to properly care for the health of the children of the poor.

The details of carrying out this work cannot be taken up in a short editorial, but we wish to express our appreciation of Mr. Rosenwald's generosity and to thank him for what he has done for the children of Chicago.

BOOK REVIEWS.

THE PREVENTION OF DENTAL CARIES. By J. SIM WALLACE, D. Sc., M. D., L. D. S. Dental Surgeon and Lecturer on Dental Surgery and Pathology, London Hospital. Hon. Dental Surgeon to the West End Hospital for Nervous Diseases. Second Edition. Published at the office of *The Dental Record,* London, 1912.

In December, 1911, we had the pleasure of reviewing this most excellent little volume, and the fact that the first edition has been sold out in six months is proof positive of the active interest taken in the work. This interest is manifest not only on the part of the dental profession but on the part of medical men as well. Medical journals reviewed the work most extensively, one of them devoting nearly forty pages to an almost complete reproduction of the work, and another taking three successive issues to consider the principles advanced. This is most encouraging. When the medical and dental professions unite in studying this disease there will be some hope of preventing it.

We congratulate Dr. Wallace on the success of his work.

PHYSIOLOGY. A Manual for Students and Practitioners. By A. E. GUENTHER, Ph. D., Professor of Physiology in the University of Nebraska, and THEODORE C. GUENTHER, M. D., Attending Physician, Norwegian Hospital, Brooklyn, N. Y. New (2d) edition, thoroughly revised. 12mo, 269 pages, illustrated. Cloth, $1.00, net. *The Medical Epitome Series.* Lea & Febiger, Publishers, Philadelphia and New York, 1912.

MICROSCOPY, BACTERIOLOGY AND HUMAN PARASITOLOGY. By P. E. ARCHINARD, A. M., M. D., Bacteriologist, Louisiana State Board of Health and City Board of Health, New Orleans. New (2d) edition, thoroughly revised. 12mo, 267 pages, with 100 engravings and 6 plates. Cloth, $1.00, net. *The Medical Epitome Series.* Lea & Febiger, Publishers, Philadelphia and New York, 1912.

This *Medical Epitome Series* is becoming quite popular in its various departments for a quick reviewing of the subjects treated. The volumes are small and handy and the essential facts are thus made readily available. At the end of each chapter a list of questions is given embracing the main points considered in the chapter, which enables the student to refresh his memory of the subject in the briefest possible manner.

PRINCIPLES AND METHODS OF ORTHODONTICS. An Introductory Study of the Art for Students and Practitioners of Dentistry. By B. E. LISCHER, D. M. D., Professor of Orthodontics, Washington University Dental School; Member of the American Society of Orthodontists; Author of "Elements of Orthodontia," etc. 12mo, 258 pages, with 248 illustrations. Cloth, $2.75, net. Lea & Febiger, Publishers, Philadelphia and New York, 1912.

The author of this book with characteristic modesty entitles it "An Introductory Study," but a careful perusal of the volume will show that the subject is carried well beyond the introductory stage. In fact, it is a very satisfactory and concise statement of the essential facts in orthodontics, and it merits a place in the library of every dentist. The author's familiarity with the subject and all that has been written upon it enables him to condense the theories of the past and compare them with those of today. He liberally credits all those who have written along these lines, and is sufficiently broad to see the good that may exist in all the so-called "schools" of orthodontics. Dr. Lischer goes straight to the point in his presentation of the subject regardless of whom he may oppose or whom he may endorse, which ensures to the reader an unbiased consideration of the principles involved.

The publishers have done their work well, having printed the book on very heavy paper, which in itself tends to lend distinction to the volume.

DENTAL STATE BOARD QUESTIONS AND ANSWERS. By R. MAX GOEPP, M. D., Author of Medical State Board Questions and Answers. Octavo volume of 428 pages. Philadelphia and London, W. B. Saunders Company, 1912. Cloth, $2.75, net. W. B. Saunders Company, Philadelphia, London.

The primary object of this book is to afford the readiest means for those who are coming up for examination to prepare themselves, and the questions are compiled for the most part from lists of state board examinations held in recent years. It is a quite comprehensive list and will be of service to the candidate in reviewing for examination, but it must be recognized that the tendency of such works is to make a parrot of the student rather than a thinker. The author states in his preface that the answers are given in the briefest manner, and he refers his readers to the standard text-books for greater amplification of the subjects. This is good advice if the student will accept it, but most of them will prefer to take the shortest possible cut with the idea of squeezing through an examination, rather than to aim at a comprehensive grasp of the subject. Most of the answers given are concise and to the point, but some of them are wrong. The advice to apply arsenical fiber to the pulp of a deciduous tooth for its destruction is not safe teaching, and in another edition of the book should be eliminated. The work will prove of service to practitioners as well as to students in reviewing the essentials of any subject, if the reader will only bear in mind the object of the book and not rely on it for a comprehensive presentation of the subject.

LOCAL ANESTHESIA IN DENTISTRY. WITH SPECIAL REFERENCE TO THE MUCOUS AND CONDUCTIVE METHODS. A Guide for Dentists, Surgeons and Students. By Professor DR. GUIDO FISCHER, Director of the Royal Dental Institute of the University of Marburg. Translated by Dr. Richard H. Reithmüller, of the Dental Department of the Medico-Chirurgical College, Philadelphia. Large octavo, 202 pages, with 105 figures (mostly colored). Cloth, $4.00, net. Lea & Febiger, Publishers, Philadelphia and New York, 1912.

This is the most exhaustive treatise on the subject that we have ever seen, and it should be read by every practitioner who wishes to familiarize himself with local anesthesia. The author, after a very careful investigation of the claims of various drugs, places his reliance upon novocain, and argues that cocain on account of its specifically high toxicity should be dispensed with. We believe that this is excellent advice, and we feel sure that if the suggestions given in the book are more generally followed there will be fewer accidents.

But in this connection we wish to caution the profession against the indiscriminate use of local anesthesia. We should of course in all cases try to minimize the pain of dental operations, we should be considerate to the last degree, and be the essence of kindness and gentleness in the handling of our patients, but to make it a prominent feature of our practice to inject anesthetics into the gums and the bony tissues for the performance of the routine work of operating on cavities in teeth we do not believe to be for the best interests of the patient except in possible rare instances.

There are too many factors entering into this question to permit a detailed consideration in a brief book review, and we will summarize by saying that wherever local anesthesia is indicated this book will be of great service to the practitioner, but that no operator should allow himself to be carried away with the idea sufficiently to use it in all those cases where gentleness and delicacy of manipulation will answer a better purpose.

PRACTICAL HINTS.

Edited by J. E. Schaeffer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, The Dental Review, 55 State Street, Chicago, Ill.)

How to Steady Your Engine Hand Piece:—Take a piece of rubber tubing, say about 3 inches, such as is used on fountain syringes. Stretch over hand piece, being careful to leave about a half inch of space from point where you insert the burr. To clean it take a damp cloth and a little soap. Try it!—*Chas. H. Wachter, Girard, Ohio.*

To Recover Detached Porcelain Crowns:—Throw into a bottle of hydrochloric acid and allow to remain over night; the cement is disintegrated and the post and coping can be easily removed. If the coping fits closely lift away the edge slightly with a sharp pointed instrument. The cement can also be thus removed from gold crowns, doing away with the likelihood of bur punctures.—*J. P. Luthringer, D. D. S., Peoria, Ill.*

Making Smooth Broaches:—An ample supply of smooth broaches for the treatment of root canals can be obtained for practically nothing. A dozen barbed broaches, medium size, with long aluminum handles, can be bought for one dollar. After they are used as barbed broaches, the barbs may be filed off smooth and they can be used wherever a smooth broach is needed. These broaches are easily cleaned and sterilized, as there is no joint between broach and handle.—*G. P. Walker, D. D. S., Assumption, Ill.*

A Temporary Splint:—It frequently becomes necessary to open up a pulp chamber or drill into a tooth that is extremely sensitive to the touch, especially in cases of abscesses and pericementitis. In these cases I have found it a very nice way to soften modeling compound and pack it over and around the affected tooth and also one or two of the approximating ones. While the compound is soft, with your thumb and index finger squeeze it away from the "sore" tooth and to it adjust a double bow cervical clamp and pack compound well under the bows. After the compound has hardened you can drill into the tooth almost with impunity, as it is held absolutely rigid and secure. Molars are not so easily handled as bicuspids and anteriors.—*H. A. Proehl, D. D. S., Minneapolis, Minn.*

A Sub-Periosteal Abscess:—In a given number of cases the periosteum is unyielding, due either to the fact that it is thicker or more dense. The pus collects beneath it and lifts it from the bone. This changes the entire complexion of the case. Every symptom is more severe, the swelling is diffuse, a sense of fluctuation is elicited only on deep pressure. The underlying bone is always in danger under these conditions, and unless the pus is evacuated early, necrosis results from the shutting off of the circulation, together with the direct harmful influence of the bacteria and their toxines. It is obviously important, therefore, to recognize early whether the pus has penetrated the periosteum or has collected beneath it. The dangers of an extensive sub-periosteal abscess are far-reaching.—*F. B. Moorehead, M. D., D. D. S., Chicago, Ill.*

An Unfortunate Accident:—Whatever sort of an appliance we make for our patients, let us be sure to make it a *safe* proposition *first*—one which cannot be swallowed.

Here is a case: Patient, male, about 38 years old, wearing a *"removable bridge plate,"* constructed by a dental parlor, consisting of a cuspid, 2 bicuspids and a molar, a gold clasp at either end and a rubber base.

About two months ago, during a fit of laughter, the appliance was swallowed, lodging in the throat, away down, causing much distress to the patient, who applied to the County Hospital for relief. Several physicians tried to reach the "plate," but all efforts resulted in failure. After about 4 days the "plate" which had caused so much trouble seemed to slip further down. All pain then disappeared.

There have been five X-ray pictures taken and the "plate" cannot be located. It is now over two months since this happened and the patient experiences no inconvenience—but who can tell just what this may cost this man later on?—*A. M. Hewett, D. D. S., Chicago, Ill.*

A Proper Diagnosis:—To determine that a chronic alveolar abscess exists is usually not difficult; to determine the exact condition of the various tissues involved requires a more careful examination than is usually given. The latter is of the utmost importance, as it indicates the treatment for the particular case. In making a diagnosis attention should be given: first, to the periapical tissues; second, to the conditions within the pulp canal. First consideration should be given to the periapical tissues, for the conditions found will determine the prognosis and indicate the treatment to be employed. From the many cases which have come under the writer's observation in school clinics and practice, it is apparent that many dentists do not make any examination whatever of the periapical tissues; in fact, make no diagnosis at all other than to determine that there is an abscess. It is so easy to make proper examination of the periapical tissues, and this is so important that the common failure in this regard is inexcusable. It seems to be due to the fact that such an examination is classed as a surgical procedure and there is a fear of doing some injury.—*A. D. Black, M. D., D. D. S., Chicago, Ill.*

Repairing a Perforation:—If you have to cure a pierced tooth floor take a drill of convenient size and with it give a round shape to the hole. Then by means of cotton-dressings during one or two days press the soft tissues well out of reach. In the meantime have an ivory-maker prepare you a round ivory-rod, corresponding in size to the drill employed and close up your cavity with a suitable piece, forced right into it. This idea of restoring nature seemed to me so reasonable that I have tried this system with a little modification, however: in the place of ivory I used lead, thinking that lead would be easier tolerated by the mucous membrane. I experienced a marked improvement on the ancient foil-treatment, inasmuch as in the one particular case where I employed a lead-rod (after Linderer's idea) the tooth kept comfortable for fully three years, when soreness forced me to take out everything again. This happened a year ago with a single upper molar, the only one left on that side and which the patient, an elderly wealthy man, wanted to conserve under any condition in order to avoid artificial teeth.—*Wm. Hirschfeld, Paris, France.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of $2.00 an inch.]

EDITOR DENTAL REVIEW:

To avoid further correspondence I hereby state that I am no longer connected with a "Haskell Post-Graduate School." L. P. HASKELL.

NORTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the North Dakota State Board of Dental Examiners will be held at Fargo, commencing Tuesday, July 9, at 9 a. m., continuing through the 11th. For application blanks and full particulars address F. A. Bricker, Secretary, Fargo, N. Dak.

NORTHERN OHIO DENTAL ASSOCIATION.

The Northern Ohio Dental Association will hold its next annual meeting at Cedar Point, June 11-12-13, 1912. An excellent program is assured; not only prominent members of our own organization, but eminent clinicians from outside of the state, will be present and take part. Cedar Point is the finest watering and convention resort on Lake Erie. It has fine hotels and restaurants, a big convention hall, and is reached by direct boat from Toledo, Cleveland and Detroit; also by electric and steam via Sandusky. No more delightful place could be found to which to bring the ladies for a brief vacation. C. D. Peck, Secretary, Sandusky, O.

WYOMING STATE BOARD OF DENTAL EXAMINERS.

The Wyoming State Board of Examiners will meet to hold examination for the examining of applicants, at the State Capitol, Cheyenne, Wyo., on the first, second and third days of July, 1912. All applications must be complete and in the hands of the secretary fifteen days prior to the time set by the board for examination to begin. The written examination consists of anatomy, physiology, histology and bacteriology, chemistry and metallurgy, oral surgery, anaesthetics, operative and prosthetic dentistry, materia medica and therapeutics, prophylactics and orthodontia. For further information and application blanks, address Peter Appel, Jr., Secretary, P. O. Box 643, Cheyenne, Wyo.

MURDER.

Can any dentist identify the plate described below? If so please communicate with the Chicago Police Department.

The following is a description of the woman found murdered at 4165 Arlington avenue, Los Angeles, Cal., on the 9th of May:

About 35 years, 5 feet 8 inches, 165 pounds; general build, larger than average; form well filled; was apparently of graceful carriage; full face; nose shapely, rather short and slightly turned up; dark hair, slightly curly, rather thick and about thirty inches long; eyes blue; wrists well formed and hands shapely; fingernails conical and well manicured; feet small.

What remained of the natural teeth were regular; wore artificial partial red rubber plate, consisting of seven teeth; upper right central and lateral upper left central and lateral anterior teeth of block section variety, being on right side of plate; first bicuspid on left side and first bicuspid and upper left first molar of these posterior teeth are plain rubber plate and well made (in the opinion of dentists work was done recently); distinguishing features of plate are oval suctions on each side of ridge, indicating hard, bony palate.

She is supposed to have come from Chicago.

RECENT PATENTS OF INTEREST TO DENTISTS.

1,009,551. Dental appliance, Guy J. Nations, Quincy, Ill.
1,010,145. Dental cap crown slitter, James W. Ivory, Philadelphia, Pa.
1,010,146. Pad holder for dental purposes, James W. Ivory, Philadelphia, Pa.
1,010,147. Pad holder for dental purposes, James W. Ivory, Philadelphia, Pa.
1,009,912. Articulator for making artificial dentures, Charles E. Luce, Stuttgart, Germany.
1,010,862. Tooth extractor, William C. Lemow, C. I. Heid and A. W. Speicher, Carbondale, Pa.
1,010,896. Tooth for bridgework and crown work, Harry B. Gregory, Lansing, Mich.
1,011,239. Dental engine, Oscar H. and A. F. Pieper, Rochester, N. Y.
1,011,243. Automatic release for grinding burs, William C. Pritchard, Lancaster, Pa.
1,012,543. Antiseptic rubber dam holder, Carll A. Hallet, Riverhead, N. Y.
1,012,401. Dental swaging apparatus, Piercy B. McCullough, Philadelphia, Pa.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, solicitor of patents, Fendall Bldg., Washington, D. C.

ATTENTION! MEMBERS OF THE DENTAL PROFESSION OF THE UNITED STATES OF AMERICA.

The Fifteenth International Congress on Hygiene and Demography is to be held in Washington, D. C., Sept. 23-28, 1912, under the auspices of the United States government. This is the most important meeting of this kind held in this country in its history, and the United States government is acting as host to the fifteen nations that have so far signified their intention of participating in the coming congress. This organization is the highest authority in matters of hygiene in existence today. Through the courtesy of the United States government the dental profession of this country has received an invitation to contribute to the success of the coming congress. A place has been made for representatives of the dental profession both upon the literary program and among the exhibitors. This is the first time that the dental profession of this country has received such recognition by the home government.

The opportunity for which we have been seeking, that is, the opportunity to show the important relation the human mouth bears to the health, strength and welfare of mankind, is now before us.

The influence of this congress is world wide in its scope and will be visited by thousands upon thousands of people who are interested in hygiene and the general welfare of mankind.

If American dentistry is to maintain its reputation throughout the world it behooves the members of the profession of this country to unite in a general effort to have the largest, finest and most instructive dental exhibit in the history of dentistry assembled on this occasion.

At the request of the Oral Hygiene Committee of the National Dental Association, Dr. J. W. Schereschewsky, U. S. P. H. and M. H. S., director of the exhibition, has set aside 1,000 square feet of floor and 500 square feet of wall space in the building which is being erected for the exhibits to be devoted for the use of the dental profession for exhibit purposes.

At the meeting of the Oral Hygiene Committee of the National Dental Association, held in Cleveland, March 23d, 1912, a resolution was passed inviting the oral hygiene committees of all state and local organizations to co-operate with it in making a success of this exhibit. Space will be assigned in such a manner that each state, city and town will receive full credit for contributions in this direction.

The committee earnestly requests that every member of the profession who is interested in mouth hygiene and the welfare of the dental profession, become actively interested in a campaign to make a success of this exhibit. The oral hygiene committees of the state dental societies should endeavor to place themselves in touch with local organizations in their states in an endeavor to secure aid in the way of material suitable for exhibits and in money to defray the expenses of such an exhibit as this should be. The committee would ask that each state and local organization make appropriations to meet the expense of collecting, mounting and displaying such material as would make a creditable exhibit.

The committee requests that the oral hygiene committees that can or will take part in this exhibit, communicate at once, or at the earliest possible moment, with Dr. W. G. Ebersole, chairman of the Oral Hygiene Committee of the National Dental Association, 800 Schofield Building, Cleveland, Ohio, or, for local information, to Dr. W. Smith Frankland, The Burlington, Washington, D. C., assistant secretary-treasury of the National Mouth Hygiene Association for the District of Columbia.

The Oral Hygiene Committee of the National Dental Association instructed its secretary, Dr. Waldo E. Boardman, of Boston, Mass., to communicate with Dr. William H. Porter, of Boston, Mass., with a view of obtainnig some idea of the dental exhibit which was shown at the International Hygiene Exhibition in Dresden, May-October, 1911. Dr. Potter's letter is given herewith with a view of giving some idea of how to build or prepare an exhibit of this kind:

"Boston, April 13th, 1912.

"Dear Doctor Boardman:

"In regard to the Dental Exhibit at the International Hygiene Exhibition in Dresden, May-Oct., 1911, I am obliged to rely on my memory in as much as I was unable to find a catalogue of this portion of the department. There were in the exhibit as follows:

"1. Large numbers of anatomical specimens. Skulls: parts of skulls with teeth in place. In this respect it was similar to the exhibition in connection with the 5th International Dental Congress at Berlin, 1909.

"2. Orthodontia cases represented by models. Regulating apparatus.

"3. Teeth representing the progress of decay from the initial softening to the large destructive cavity.

"4. Charts showing the percentage of dental decay amongst people of various occupations and living under various conditions.

"5. Charts showing the influence of food and water (hard or soft) upon the percentage of dental decay.

"6. Charts giving rules for the prevention of decay.

"7. School dental clinics. A description of the most important ones of Europe with literature giving statistics and methods of work.

"8. The analysis of saliva. Charts showing the method employed.

"These are a few of the features. There were many more which I wish I could remember.

Very truly yours,

"William H. Potter."

Let every member of the profession who is interested write, offering to do his part. Do not wait for us to write to you, for we have much to do if we undertake to make a success of this work.

At the same meeting, the Oral Hygiene Committee of the National Dental Association passed a resolution inviting the dental colleges of this country to contribute to the success of the dental exhibit; and the secretaries or deans of the various colleges are requested to communicate either with Dr. W. G. Ebersole or Dr. W. Smith Frankland indicating what aid they will give in connection with the coming exhibit. The exhibit will be so arranged that each college will be assigned space for its own exhibit.

Come to our aid and give us your hearty support in this work.

Appealing to every member of the profession to become actively interested in this exhibit in the interest of the dental profession as a whole, we are, respectfully yours, The Oral Hygiene Committee of The National Dental Association. W. G. Ebersole, B. Holly Smith, Waldo E. Boardman, J. V. Conzett, S. W. Foster.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The semi-annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois will be held at the Northwestern University Dental School, corner Lake and Dearborn streets, Chicago, beginning Thursday, June 13th, 1912, at 9 a. m. "The following preliminary qualifications shall be required of candidates to entitle them to examination by this board for a license to practice dentistry in the State of Illinois: Graduates of a reputable dental or medical school or college, or dental department of a reputable university, who enter the school or college as freshmen on or after the school year 1906-7, must have a minimum preliminary education of not less than graduation from an accredited high school or a certificate from the state superintendent of public instruction, equivalent officer or deputy, acting within his proper or legal jurisdiction, showing that the applicant had an education equal to that obtained in an accredited high school; which certificate shall be accepted in lieu of a high school diploma." Candidates will be furnished with proper blanks and such other information as is necessary, on application to the secretary. All applications, together with the fees, twenty-six dollars ($26.00), must be filed with the secretary at least five (5) days prior to date of examination. The examination fee is twenty dollars ($20.00), license fee five dollars ($5.00), registration fee one dollar ($1.00). Address all communications to T. A. Broadbent, Secretary, 705 Venetian Building.

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THE DANGEROUS DRUG IN DENTISTRY.*

BY J. E. HINKINS, D. D. S., CHICAGO.

In looking over my note books, I found a record in 1893 of a peculiar sore mouth.

The patient had been sent to me by a physician, who said, "he had tried all the lotions at his command and the mouth was getting worse."

After a careful diagnosis I was unable to find any solution. The gums had begun to slough around the left upper cuspid in both directions with a very acute inflammation of the entire upper jaw. I held daily consultations with the doctor and we finally decided that the patient had symptoms of arsenical poison.

After a careful examination of her food, clothing and papered room no trace of arsenic was found by the Marsh gas test.

Then, we learned that she had been doing fine needle work using a yellow silk thread. She was in the habit of biting this off and moistening it with her lips to thread the needle. After subjecting part of this to boiling we used the Marsh test for arsenic and found the mirror spot in abundance. But we had lost five teeth in the meantime. This was my first case of arsenic poison, and I have watched its action ever since.

The second case that came under my observation, was that of a man that wore a swedged aluminum plate. I have the plate here. The trouble was discovered after a thorough examination to be arsenical poison. We located the arsenic in the wall paper of his room with the Marsh gas test as before.

The third case was much more difficult. I shall show you a cast aluminum plate that was worn by a Grand Army man. The doctor in charge of this case with me was a homeopath. There were no sores in the man's mouth, but he complained of a continual burning there, and though we made a very careful examination of his habits of living, food, drink, sleeping room, etc., no trace of arsenic could be found.

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*Read before the Odontological Society of Chicago.

Then, we took the plate out of his mouth, but the burning pain continued. Finally, I decided to test the urine. After nearly evaporating a pint of urine over a water bath, we subjected the remainder to the different arsenical tests and found traces of arsenic. Where did it come from? One day while he was in the office complaining that he had received no relief from the pain I accused him openly of not giving me a square deal. When I asked him what medicine he was using at home he frankly admitted he was taking the "jag" cure treatment. We found arsenic and traces of gold in this concoction. We had him gradually reduce his doses of jag-medicine for two weeks and the pain subsided enough for him to use a black rubber plate again.

The fourth case was that of an old lady who was sent to me by her friend. A sore mouth was her trouble. Upon examination I found a full denture—both plates of swedged aluminum. Here they are. The mucous membrane looked as if it had been cooked. I kept the plates and immediately commenced an examination of her habits of living. I found that she lay in her bed in a corner of her room scratching the wall paper with her fingers and examination of this wall paper by the Marsh test revealed arsenic.

Treatment: Hydrate of iron in combination with good food, plenty of sunshine, pure air and exercise.

As an obtundent in the treatment of pyorrhea teeth, arsenic is invaluable to me, especially so in dealing with teeth particularly sensitive to hot and cold. A small hole can be drilled through the enamel and one hundredth part of a grain can be put on a little carbolised cotton sealed up in the tooth with soft cement flowed over it. Forty-eight or sixty hours afterward you can drill almost into the pulp with hardly any pain at all.

Some years ago we had a number of obtundents on the market and nearly all the efficient ones that I examined had arsenic in them.

HISTORY OF ARSENIC.

Arsenic, properly pronounced arsinik, or arsenicum, has its origin long before Aesculapius who existed about 1300 years B. C. Darby says the Chinese in their medical work entitled Nuci-King.

written about 2700 B. C. describe arsenic in the use of dentistry. But the first reliable account of the knowledge of arsenous acid is found in the writings of Geber, who was a Sabine of Mesopotamia, of Greek parentage, but a convert to Islam. His real name was Abou-Moussah-Dschafer-al-Sofli, termed the father of chemistry.

Geber who lived in the forepart of the eighth century, prepared his arsenous acid by burning arsenic sulphide and collecting the sublimate. The latter alchemist became well acquainted with its properties and often pointed out its poisonous action.

Arsenic, which is so closely allied chemically to antimony, and with whose sulphides the ancients were acquainted, was first prepared by the Western alchemists in the thirteenth century.

Arsenic was first termed mercurius, because the mercury turned copper white; some called it arsenic medicina Venecum; dealbans. The ancients feared its use. It was not until in the early part of the 16th century that Paracelsus, the father of charlatans, had made great spread of the use of the drug. It has been the history of all quacks to step in the path of this great bombast, who pulled teeth upon the public highways without pain, just the same as the advertising charlatan of the present day.

In 1641 John S. Schroeder published in his "Pharmacopocia Medico-Chymica" a method of instruction how to obtain it, and in 1733 George Brandt, a renowned Swedish chemist, first introduced its chemical properties when the regular physicians began its use.

Arsenic was then classed by many chemists with the metals, while others with the non-metallic elements; hence we find the description of it and its compounds in the beginning of some works on chemistry, and nearly at the end in others. In its appearance it resembles the metal, and scarcely any one examining it in a pure condition, deposited upon glass, would hesitate to pronounce it a metal; but in its chemical combinations it resembles some of the non-metallic substances more than it does the metals. He would, however, speak of it as a metal without attempting to decide whether it was one or not.

However, arsenic is a metal of bluish white color, not unlike that of steel, with a great deal of brilliancy. It is odorless, but when heated emits a strong odor of garlic. Arsenic was also for a long time considered to be a constituent of the animal body, because it has been found in the soil of grave yards, hence it was thought to be exuded from the human bodies, and Dragendorff makes specific mention of the possibility of arsenic finding its way into the animal system by means of food plants growing in soils containing arsenic.

Whatever may be the facts regarding the plants the substance is easily brought to a solution in distilled water.

Virgin soils were treated at ten different points with distilled water for periods varying from 36 to 48 hours and obtained but one doubtful result, the other nine showed distinctly that arsenic had gone into solution.

Arsenic itself is never employed in medicine, but it is used in the form of arsenous acid or the arsenates of sodium, potassium or copper. Arsenous acid is derived from arsenic bearing ores by roasting them in a reverberating furnace, where it arises in the form of a vapor which adhers to the walls of the furnace, requiring a second sublimation, owing to the first deposit being quite impure.

It is prepared in Bohemia, Saxony, and England, where it is procured on a large scale as collateral product, during the smelting of cobalt ores. We shall, therefore, only consider the arsenous acid which is regarded as a typical preparation of arsenic.

PHYSIOLIGICAL ACTION OF ARSENIC.

The primary action of arsenic seems to be that of killing epithelial tissue. By epithelial tissue I mean derivatives of the embryonal ectoderm. Thus after the giving of arsenic one finds the mucous membrane of the intestine necrotic in the form of a fatty degeneration; one finds, when further doses are given, that the skin, the hair, and the nails, the glandular structures, and finally the nervous tissues show the arsenic in either the form of arsenitis or in albuminates.

Arsenic is first taken up by all the vessels of whatever description, which belong to the digestive tube. It is taken up by the lymphatics, by the portal venous system, and is found naturally in the auto-hepatic or cis-hepatic vascular apparatus, but from the digestive organs it is particularly carried off by the radicles of the portal vein.

In large doses it influences the circulation and decreases in the force and frequency of the pulse, accompanied by a decided fall in arterial pressure, and in these amounts it is to be regarded as a distinct cardiac depressant which depressed all the heart's component parts, such as the ganglia, muscle and nerves.

The fall of the arterial pressure is due to vasomotor depression with relaxation of the general blood vessels, more especially those of the abdominal cavity.

This series of grave symptoms is due to the impression made on the abdominal portion of the sympathetic nerve and produces anatomico-pathological changes of the vasomotor dilating the blood vessels.

The neutral salts of arsenic acid are as poisonous as those containing arsenous acid; according to the best authorities even more so. Arsenous acid is easily transformed into arsenic acid, but only by the living albumen of animal or vegetable organisms; the transformation of arsenic acid into arsenous acid is still more easily accomplished, but is not confined to living albumin.

Drs. Binz and Schulz proved by their experiments outside of the organism on various organs of the human body, that the arsenic had a corrosive destructive effect upon living cells and blood.

Professor von Liebig considered that when arsenic enters the system it forms into a definite chemical combination with albumin and muscular tissue, forming such stable compounds as the *vis vitae*, is unable to break up, and therefore the vital functions are destroyed.

Arsenic destroys large and small organisms and can be readily explained from the facts observed by those interested in medical jurisprudence, that in the bodies of those who have succumbed to the influence of arsenic the parts which have come in direct contact with the poison remain for weeks almost unchanged; the digestive organs are found in a state of remarkable integrity, while the rest of the body is in a state of putrefaction; it has been so proven to have an effect due to the antiseptic properties of arsenic.

"White arsenic slowly becomes changed to yellow sulphide by the evolution of sulphuretted hydrogen in the decomposition of the stomach or of its contents. It then forms a deep yellow stain through the coats and appears on the external surface."

In small doses it increases the pulse rate, stimulates the peripheral vagi in the lungs; in toxic quantities it acts as a powerful respiratory depressant. It escapes from the body chiefly by the kidney and bowels; it has been traced in the saliva and in the milk of nursing women.

Professors Stockman and Charteris made a research on the action of arsenic in man and animals, and gave the following conclusions:

1. In small repeated doses arsenic acts on the bone marrow causing increase in the number of leucoblastic cells, little or no change in the number of erythroblastic cells, marked hyperemia, and atrophy of fat cells.

2. During this stage there is no increase in the red corpuscles or hemoglobin of the blood.

3. In repeated doses large enough to cause cachexia and emaciation, the bone marrow undergoes hyaline degeneration.

4. This accompanied by decrease of the red corpuscles and hemoglobin of the blood.

5. All these changes occur with other drugs and poisons and are not peculiar to arsenic.

6. Arsenic has no direct effect in increasing the production of red blood corpuscles by the bone marrow.

7. The hematinic action of arsenic in pernicious anemia, malaria, lymphadenoma, leukemia and some other diseases, probably results from a specific action on the parasites which cause these diseases and not from any direct action on blood formation.

The great difficulty in slow arsenical poisoning is paralysis, which cannot be doubted. The paralysis occurs from a nerve or a branch of a nerve.

Physicians consider that many cases of albuminuria is due to the habitual use of even minute doses of the drug, which is due to the passage of the arsenic through the kidneys.

When arsenous acid is applied to the skin for any length of time, it produces redness, vesicles and pustules, and if the tissue be denuded or if it be applied to a mucous membrane, it penetrates deeply and produces deep-seated necrosis, and infrequently produces skin erythemata; acute general erythemata may follow shortly from acute poisoning in a form resembling rubcola and scarlatina.

Dr. Conrad Alexander gives the mode of production of paralysis in poisoning by arsenic. He formulates his conclusions as follows:

First: That the symptoms in cases of arsenical poisoning in man point to the fact that the symptoms are attributable to the action of the poison on the peripheral nerves and muscles, and are due to the production of multiple neuritis.

Second: It is possible in rabbits in certain instances to produce permanent paralysis with arsenic, which is especially located in the posterior limbs, and which is accompanied by a high degree of atrophy of the muscles.

Third: In paralyzed animals degenerated and atrophied nerve fibers are to be found in the small muscular nerve branches and in the nerves of the subcutaneous connective tissue, accompanied by swelling and hemorrhage into the perineurium. The spinal cord of animals so paralyzed is perfectly normal.

Fourth: Paralysis in these animals, therefore, is dependent upon degeneration and atrophy of the peripheral nerves and muscles.

Fifth: Experimental observations seem to warrant the assumption that arsenical paralysis in man is similarly produced.

Sixth: The muscular atrophy created in animals poisoned with arsenic is not of neurotic origin, but is entirely independent of the nervous system.

Seventh: The muscular atrophy in animals poisoned by arsenic in the case of rabbits is not a fatty degeneration, but a coagluated necrosis which is ordinarily accompanied by the formation of calcareous deposits.

Eighth: Degeneration of the nerves and muscles is in all cases of paralysis occurring in animals poisoned with arsenic probably due to the production of disturbed action in the capillaries of the nerves and muscles.

Drs. Trousseau and Morganti state that arsenic even in small doses produces an irritation of the buccal mucous membrane, and not infrequently spreading to the air passages, resulting in the production of a dry cough, bronchitis, harshness of the voice, and sometimes the nasal mucous membrane is attacked with a burning in the nose and coryza. It has been known to effect the tear ducts and the conjunctiva in consequence of the extension of the catarrhal process. It has frequently occurred that patients so affected suffer from the flow of tears, photophobia, amblyopia, and sometimes swelling of the eye-lids and the usual symptoms of conjunctivitis, the objective included.

As nervous symptoms there appear in some cases headache, buzzing in the ears and giddiness. It is known that patients have taken but three drops of Fowler's solution for dyspepsia, a diminution of the sexual instinct occurred, and disappeared after the discontinuance of the drug.

Arsenic even in small doses and a single dose will produce nauseating emeto-cathartic action, but when administered in repeated doses, determines the injurious effect. A substance capable of inducing emetocatharsis produces an exaggerated gastrointestinal secretion which is not simply mucus, but contains also so large a quantity of albuminous serosity and the rehabilitations of the tissues becomes impossible; and consequently there are languidness and impossibility of general nutrition, caused by the suppression of the gastric functions, or at least by the diminutions in the functional activity of the stomach. Consequently, as you see, many obstacles are placed in the way of the performance of the various functions and in the way of general nutrition of the system. And if these obstacles continue to exist, if instead of lasting for days they are present for weeks, you can understand what will ensue; losses which cannot be repaired; insufficient nutrition, consequently, little by little organic decadence, marasmus, and death.

Dr. John Glaister found in 120 cases of poisoning from arsenic which have been recorded from time to time in various theses, medical journals and elsewhere, 37 ended fatally. Of this series, therefore, the results of 118 cases being known, the mortality rate was 31.36 per cent. This, however, must not be reckoned as the true mortality of the average hundred cases, because the total number of cases on record is far too small upon which even to base a relatively accurate rate. Of these fatal cases we are only able to present the results of the post-mortem examinations of 19, and some of the records even of these contain but the sparest particulars.

The physiological action of arsenous acid externally if applied to the normal skin, produces no change of any moment whatever, but if the surface be broken or a wound or sore exist, its action is very powerful, and it destroys the tissues to a considerable extent. For this reason it has been employed as a caustic by "quacks" and to some extent by regular physicians, the latter using it to remove warts, condylomata, and similar growths, while the former have employed it chiefly as a "cancer cure" asserting that it would take the disease "out by the roots."

There is probably no empirical medicine better known or more frequently prescribed than is arsenic in the treatment of diseases of the skin, and yet I venture to say that there is no remedy whose action is so little understood, and withal whose effect is more uncertain. It may be very acceptable to the patient at first, but eventually I believe there is not one in a thousand that has no cause for regret of its use.

Arsenic is the chief ingredient of nearly all the quack remedies for the cure of cancer by external application, and like other kindred agencies are placed at the disposal of mankind, highly recognized by the physician as a valuable remedy under certain conditions, but it is also found murderously disposed in quick action for means of accomplishing in malicious purposes, discontented mortals, tired of life, have taken it as an efficient instrument of self-destruction.

When small amounts of arsenic is given to animals, particularly those of the lower types as represented by the frog, reflex action is lost long before, or more rarely at the same time, that voluntary movement is put aside, and, finally, all sensation to pain produced by heat and pricking, totally ceases.

It is therefore quite evident that the sensory nervous apparatus is affected and experiments have proved that the sensory tract of the spinal cord is at fault. Ultimately, however, the motor system also fails and complete motor palsy ensues.

Arsenic is not only a poison for the entire animal kingdom, but it is also a poison for the vegetable kingdom. A plant watered with it will perish. We know that arsenic which destroys the large organism, destroys also the smaller and even the globules; this explains readily a strange fact observed by those interested in medical jurisprudence.

CHRONIC POISONING BY ARSENIC AS RELATED BY PHYSICIANS.

Dr. Jonathan Hutchinson reports a case of arsenic-cancer after referring to the fact that arsenic, when long used, may lead to the development of soft corns on the palms or soles. Hutchinson stated that, in his belief, arsenic may also produce, or at least be an exciting cause of epithelial cancer. Sir James Paget held the same view.

Dr. Swift relates of a case in a child of six years, who from the age of two, occasionaly suffered from constipation, with offensive breath and coated tongue. He was somewhat salivated and had at times a few superficial ulcers on the mucous surface of the lips, gums or tongue. No explanation could be found for this condition; his diet was carefully regulated, the plumbing of the house was carefully investigated but without avail of its cause. He complained of weakness and occasional cramps in the muscles of the legs when walking. He had to be taken up two or three times at night to prevent him from urinating in bed and he wet his clothes often during the day. Finally the boy's urine was analyzed, and considerable arsenic was found. The question then arose from what the source of the arsenic might have originated. The carpet, curtains and furniture covering were analyzed, and found free from arsenic. A border and dado of a pictorial paper about the room was known not to contain arsenic. The wall between these was painted a peacock blue and this paint was found loaded with arsenic. The patient was then sent to the country for a change and he began to improve at once. It eliminated the source of poisoning and the boy became well.

Dr. Moore relates of a case of a seven-months infant, who was lying in a cradle lined with blue sateen and a canopy of the same material; the child became bluish about the eyes and mouth and the eyelids were a little puffy; the general appearance pale and haggard; finally a venous hum developed in the neck. No cause could be ascertained for it. Consequently the physician examined everything about the premises which might cause the suspicion of arsenic; at last the urine was examined in which was found traces of arsenic. It was then proven that the inhalation of the blue fabric of the cradle was the cause of the arsenic.

Dr. Putnam in the Massachusetts Infant Asylum found the babies looking very pale without any apparent reason. He also noticed suppurations on the fingers and a slight discharge from the ears. Occasionaly a nurse had sores on the fingers. One had an aural discharge, and skin eruptions were noticed; which was said to be caused by blue dresses worn by the nurses in the asylum which upon chemical examination were found to contain much arsenic.

A German physician has described two cases in Jena and one in Frankfort where persons using green glazed paper shades were attacked with symptoms of arsenic poisoning. In no case did the symptoms cease until the use of the shade was discontinued. The heat of the lamp volatilizing the arsenic renders the small quantity present very dangerous.

A wealthy lady in Paris consulted a physician on account of severe illness from the effect of some slow poison, but after a continuous treatment for some time he was somewhat puzzled as to the nature of the poison.

One day the woman discovered a whitish filmy powder on the surface of a glass of water. She showed it to her physician who pronounced it to be arsenic. All inquiries failed to fix suspicion upon anyone. The next day the lady filled the glass herself and kept a careful watch on it that no one tampered with it; nevertheless, the next morning the white powder again appeared. The physician finally discovered that the patient was in the habit of reading in bed by candles of dazzling whiteness which had been strongly impregnated with arsenic during their bleaching process, and the arsenic becoming volatilized by the combination, thus poisoned the air of the bedchamber.

A well known Boston physician had two or three sore fingers which another physician diagnosed poisoned by arsenic. The sufferer could not think of anything except some playing cards which he had used. They were found to be loaded with arsenic.

Dr. Wyss states that he saw alopecia areata develop on a boy after a prolonged internal use of small doses of arsenic. Wyss claims that he has established his observation on the view that this disease is due to a disturbance of nutrition of the hair follicles.

Dr. Frederick Peterson relates of a case of arsenical paralysis with unusual symptoms of locomotor ataxia.

Dr. Hipp Barella collected 29 cases of paralysis of arsenical origin, the arsenic was administered in small doses, and accumulated itself in the (primæ viæ) digestive organs and there it laid dormant and did its deadly work.

Dr. Putnam of Boston says in twenty years of practice in hospitals he never saw a case of chronic arsenical poisoning diagnosed except when the poison was due to introduction of the metal by the mouth.

Dr. Osler says arsenical neuritis from accidental poisoning is not uncommon. He quotes Folsom, Putnam, and others in Boston that arsenic poisoning may be of "domestic origin"—that is, due to absorption of extremely small quantities of arsenic with the dust from wall papers, carpets or curtains.

ARSENIC IN WALL PAPER AND FABRICS.

Arsenic has been of vast toxicological interest since the 13th century. Many writers from the middle ages up to the present day have called the attention of the effects and antidotes pertaining to domestic poisons.

In late years as for example:

Dr. J. K. Haywod has written an elaborate article showing that the emaciation of the odorous arsenic, though in minute quantities, has poisoned many persons regardless of age, sex or color. He quotes thirteen cases affected by arsenic in wall papers and fabrics. Toxic wall paper seems to affect the esthetic Bostonian more than any other class of men. The Bostonian takes great pride in the picturesque drawings and in the beautiful colors that the artist may be able to imitate Michael Angelo and other renowned masters. Then the descendants we must not forget; the vast majority of the inhabitants of the Bay State City is of the origin of Erin, where green is the natural color, patriotism evincing itself by verdant walls.

Dr. Hill, of the State Board of Health of Massachusetts, investigated arsenic in wall paper and other fabrics offered for sale; his report is as follows: He tested 212 various wall papers and found 89 to contain arsenic. In 456 samples of dry goods in which he found containing arsenic 174, and in upholsteries, etc., 300 samples arsenic contained 101. The report further states that the percentage of arsenic in fabrics contains more than one-twentieth of a grain per square yard, while wall paper contains more than one-tenth of a grain per square yard.

Dr. Kelsey of New York experienced arsenical poisoning from wall paper and from which he suffered occasional attacks of gastric and intestinal disturbance, attended with slight fever, and from a growing sense of lassitude and inability to do hard work, either mental or physical. The walls of his office were papered with a very rich green "velvet library paper."

Dr. Stokes of London examined one hundred samples of imitation Indian muslins and cretonnes. He found that twenty-three percent contained arsenic in appreciable quantities. The highest proportion, 2.1 grains of white arsenic per square yard. The colors in which arsenic was principally present were the terra-cotta reds and the greenish browns. In order to determine whether the arsenic would give off to the air by this preparation, he placed three hundred square inches, loosely folded, in a glass tube three and a half inches long and three-fourths of an inch in diameter, and forced air through the tube for six hours, but was unable to obtain evidences of arsenic in the air. It would seem, therefore, that dresses made of such material would not give off to the atmosphere the particles of arsenic. The arsenic is, however, held very loosely by the muslin, for when it was dipped in the water, it yielded up a notable amount of the poison to the water. Dr. Stokes also examined wall papers in which he found arsenic; also other articles of household use, such as plushes, velvets, carpets, mats, silks, etc., were examined and in only one sample, in a flax mat. of green color, arsenic was found. He saw a child playing with a small cardboard box colored green, which had originally contained chocolates; upon examination of the surface paper of this box it was found in about seven square inches, one-tenth grain of white arsenic.

It has been known that many children have been victims from colored Christmas candles, yes, adults were seized with curious and inexplicable symptoms, which could not be traced to the ingestion of any particular food or liquid of which they had partaken. Attention was then drawn to the candles on the Christmas tree, many of which were green, and these when submitted to analysis, proved to contain Scheile's green, the red candles, moreover, being colored with vermillion.

Drs. Kelynack-Kirkby of Manchester, England, has found arsenical poisoning in beer drinkers. They found the beer taken by patients to contain 2-100 grains of arsenic per gallon; their urine had been tested and in each of them arsenic was found, and in almost every case cutaneous manifestations such as (1), pigmentations; (2), erythematous; (3), popular eruptions; (4), vesicular formations; (5), bullous lesions; (6), pustules and boils; (7), desquamation; (8), thickening of the skin; (9), hyperidrosis; (10), rarer lesions of the skin; (11), alteration in the nails; (12), changes in the hair.

The evil use and effects of arsenic in various occupations in life and cases recorded of the injuries done the system, (to cite the cause thereof) would require many volumes.

ARSENIC IN DENTISTRY.

We now come to that which is our immediate subject and which is of great interest to every dental practitioner in the world—namely, the use of arsenic in dental surgery for the purpose of devitalizing the pulp; we will begin with its history.

Darby tells us that the Chinese 2700 B. C. used a compound with arsenic in the form of a pellet and placed it in the cavities of painful teeth.

In about the tenth century Johannes Mesue, the Arabian, used a commixture of yellow arsenic formed into a mass with which they annointed the roots of the teeth to facilitate the extraction of it.

About the year 1400, Petrus de Larglata treated dental fistulas and dental cavities with caustics and arsenic. Fifty years later Arculanus wrote on the filling of teeth with gold and recommended arsenic as an obtundent.

Two hundred years have elapsed from the time of the Puritanical Larglata to the preposterous Paracelsus, who demonstrated this empirical agent on suffering humanity in the tumults of the market, not a word nor a syllable was written, not a whisper was heard as to the subject of arsenic in dentistry, until the diligent Dr. John R. Spooner of Montreal in 1835, revived its use for the devitalization of tooth pulps.

It is asserted that in 1833 Dr. Alexander Wood, of Edinburg advocated the use of crude arsenic for the destruction of dental pulps, and it is also stated that in 1835 Chapin Harris, of Baltimore, used arsenic in the same manner as Spooner, without having any knowledge of the so-called "Spooner discovery." Since then a period of 75 years has gone by, and this empirical method has been followed up by many progressive dentists, who propose better things. However, we find evidence of dissatisfaction by the various attempts which have been made from time to time to discover something more reliable and less injurious in the killing of the pulp.

Painless dentistry is the bait of every charlatan dental practitioner, and it has become so commonly adopted that almost every patient will ask you whether you can perform painless dental operations, or can you fill teeth without hurting. If your answer is in the negative, he will put you down as unskillful and not up to date. But can we afford to place ourselves on an equal footing with the dangerous empirics by saying, "Yes," when we know that the method while killing the pain might endanger the health and perhaps the life of the patient. This may be true that arsenic destroys the alveolus, causing loss of sensation up to the symphysis. However, it is apt to go wrong. I think a tooth which has arsenic applied to it is not dead, the pulp may be dead, but the patient feels the pain.

In those cases where arsenic is applied again and again thus damages are likely to occur. If pressure is made on the pulp, pain is likely to be felt because the tooth is tender in the socket; again, arsenic is a most powerful constringent, and when applied to a pulp in which the capillaries are engorged, it is conceivable that this violent constriction causes an actual rupture of the small blood vessels, so that the blood is emptied against the walls of the pulp canal, and passes into the tubuli of the dentine producing the pink or brown color observable when the discoloration originates in this manner.

Arsenic is a caustic, irritant and escharotic and in the pulp it produces a thrombus or plug at the apex of the root, hence paralysis.

Arkovy, after a series of careful investigations concludes that arsenous acid, applied to a tooth pulp induces inflammatory hyperemia, expanding blood vessels and tendency to thrombosis, no coagulation, apparent chemical reaction with the hemoglobin in molecular form, the connective tissue cells are irritated and swollen; the odontoblastic cells are unaffected, but great degeneration of the axis-cylinder of the nerve fibers.

Gubler experimented and demonstrated that the eschar produced by arsenic contains the histological elements of the tissues; if in a muscular region, the muscular fibers are distinguishable, but they have lost somewhat. No striation is found when the part has contained voluntary muscles.

Arsenic simply exerts a toxic influence on the part of the organism with which it comes in contact; it can no longer live, or if small doses have been used it lives under adverse conditions.

Dr. Fothergill of England says this uncertainty of action of arsenic places you on the horns of a dilemna; you often have to decide betwen the risk of giving your patient acute pain and perhaps not succeeding in removing the whole of the pulp or making a fresh application of arsenic, with the risk of its action passing beyond the dental foramen and setting up periostitis. Third, and interstitial cavities which extend to or below the margin of the gum, there is a danger of leakage and consequent damage, varying from a slight sloughing of the gum which, however, is very painful and slow to heal, to much more serious consequences when there has been carelessness.

Dr. King says arsenic works such terrible havoc when once let loose, killing and sloughing the gum and causing necrosis of the process, resulting in the loss of other teeth, that the utmost precaution should be taken to prevent even the minutest portion of it being lodged on the gum.

How many cases have we had where a tooth was dressed with arsenic several times and became loose? How many cases do we come across where the patient's jaw and a portion of the bone became exposed? There is one thing certain that arsenical applications will, if not immediately, eventually discolorate the teeth.

The use of arsenic has always been taught by the progressive practitioners to be the most conservative method for the dentist.

Devitalization by arsenic leaves the dead to take care of itself; in other words, whether you are pro and con it leaves the drug to assume any position, merit or demerit as to whatever the outcome may be.

DENTISTS' EXPERIENCE WITH ARSENIC.

Dr. W. E. Harding relates a remarkable case of poisoning by arsenical paste in a case of acute pain in the lower molar. The pulp was exposed; Harding applied a small quantity of a preparation known as Baldock's nerve-killing paste, afterwards closing the cavity with cotton wool and sandarac. A few hours later the patient was seized with symptoms of poisoning by arsenic—burning pain at the epigastrium, vomiting, etc., and a rash appeared resembling measles.

Harding says that the remarkable feature of this case was that this lady had suffered in the same way three times previously; once from arsenic used by another dentist and twice from prescriptions containing it ordered by medical practitioners.

Dr. J. M. Bishoar reports a case in a young woman who had arsenic applied to the pulp of a first molar by a physician in trying to relieve a severe toothache. Two weeks later an abscessed tooth with an ugly opening on the neck was found with a fetid odor and the patient unable to open her mouth. After treating it by hot applications and the jaws were relaxed, he scraped away the diseased gum with a sharp bone curet, removing particles and spiculæ of necrosed bone.

Dr. L. C. Wasson relates a case where the use of arsenic as an obtundent has done great mischief. The patient was a lady teacher, and was previously treated by a dentist who was preparing the cavities; the torture continued for many days without any relief. She consulted a Chicago physician who informed her that a portion of the superior maxillary bone had to be removed. She suffered beyond description and returned home. When Wasson examined her he found the teeth from the second molar on the right side to the first molar on the left side apparently dead and most of them loose. the alveolar process badly necrosed and several pieces loose, but could not detect any disease of the maxillary bone, except the palatal portion on the right side. Pus was oozing from the gums in many places. However, in consultation with a physician, the teeth and all loose portions of the alveolus was removed, when a large opening of the antrum was visible.

Dr. John D. Mills of Vicksburg, Miss., relates of a case of arsenical poisoning in a girl, aged 12 years, from whom the family physician extracted the left inferior first permanent molar, then recommended the case to Dr. Mills, who tried to destroy the pulp with the usual remedies, in connection with a minute quantity of arsenic. The same evening arsenic poisoning developed and the family physician was compelled to resort to the usual antidotes for arsenic. Case recovered.

Dr. H. L. King related a case wherein the patient was treated by a dentist and a physician. The physician had put arsenic in the tooth that ached, in order to kill the nerve and stop the pain, and had warned her to be careful about swallowing any of the medicine as "it was deadly poison." After the revelation the two teeth were at once extracted and treatment begun with dialized iron, but it seemed too late. The extraction afforded slight relief, but the swelling continued and the jaw was locked as immovably as ever, and soon the pain returned in full force. Finally fluctuation was discovered at the point of the ramus, the case was pronounced periostitis. It was then lanced and it took nearly three months before the jaw relaxed. Dr. King then remarked, "Now did arsenic cause all of this trouble and if not, what did?"

Now, my colleagues, it has been my desire to discuss with you a subject in which I feel we are all deeply interested, namely, the use of arsenic as an obtundent. I believe I have shown every phase of the danger in its use.

To close, I will say, as Dr. Leory Requa said: "The uncertainty attending the use of arsenous acid for the purpose of devitalizing the pulps of teeth renders its use unpleasant and unsatisfactory in many cases." In conclusion: Again I will say what I said in the beginning, that the devitalization of living pulps with arsenic is uncertain and unsatisfactory, and it is hoped that in the near future we will have an agent upon which we can place more dependence.

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INVESTMENTS.*

BY CHARLES G. DAWES, CHICAGO.

MR. DAWES: Ladies and Gentlemen: I told a friend this evening that I expected to address the Chicago Dental Society on the subject of "Investments." "Well," said he, "most anything will go over there on investments." I said: "Why?" He said: "I had a friend whom I met here on the street about a month ago who had always had a hard time to get along in the world; he had got into trouble and gone to jail once, but when I saw him he was wearing diamonds and had a roll of bills that was thick enough to choke a cow. When I asked him what he was doing he said he was selling mining stock to doctors and dentists." (Laughter.)

I represent a profession, just as you gentlemen do, one not allied in its purposes, unless, as the humorists sometimes say, we have the same object in view when we extract everything there is in sight from our visitors. I am going to speak to you as representing the financial profession and I am going to criticise pretty severely some of the members of my profession, just as I have no doubt you at times have occasion to criticise some of the members of your profession. And I am not going to tell you what to buy; and I am not going to give you a list of approved securities, but I am going to expose, if I can, some of the devious methods by which our profession seeks to prey upon your profession. I do not need to tell you how your profession preys on our profession. (Laughter.) And if you are willing to buy anything after I get through I shall be surprised.

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*A speech delivered before the Chicago Dental Society, May 21, 1912.

THE STOCK EXCHANGE.

Now, let us take for instance, the stock exchange. I often have business with men who come to the bank to see me at times when the stock market is low, who bring in some very good securities out of their strong boxes, negotiate a loan, and get a cashier's check made out to some stock broker to pay a loss. I recognize generally in those men the same people who were telling me some five or six months before about their wonderful judgment in investments—how they had bought this stock and taken out that profit, etc. Their time had come. It always comes. The ordinary man has not one chance in a hundred of making money in stock speculation. Now, why hasn't he?

In the first place, the investor in stock on the exchanges, in ninety cases out of one hundred, invests upon representations which he does not or cannot investigate. He does not know the conditions which surround the investment which he is asked to make. He is buying goods from a public show window, managed by brokers and agents with the seller hiding in the dark.

We all know that we naturally want what seems hard to get. We all know that we become interested in anything which promises to give us a profit which is generally something which is increasing in price before our eyes, the presumption being naturally that it will continue to increase in price. We will say that some of these manipulators of the stock exchange want to get some of the money of the dentists or the physicians whose attention is chiefly devoted to their work and whose professional proficiency comes at the expense of the time which is requisite to enable them to invest their money in the best possible way.

We will take the stock of a railroad for which manipulators desire a sale at a high price. They will arrange with other large holders of stock to form a pool. Now that is not a pool of money to buy something. That is one kind of a pool. But this, at first, is a pool to keep something from being sold. Why? Because they have got to do a little buying themselves before they get the public interested; before they get your interest excited in this up-trend of the stock on the market and in doing this they do not want to buy any more than is necessary. They have got something to sell. So they will take, we will say, the stock of a railroad corporation that is new, and they will form a pool of the large holders of the stock, and there will be a rigid iron-bound agreement that none of that stock is to be sold except at an agreed upon time and conditions. That lessens the supply of stock which is to be manipulated, and then they will start in with what are called "wash sales." One firm of brokers will bid the stock up and down by pre-arranged transactions with other brokers; no stock actually passing at all; the brokers by agreement buying and selling simply for the purpose of making public quotations, to excite the interest of the public, holding back in reserve this supply of stock which they want to sell. When public interest is finally awakened in the stock then they commence to sell them the pool stock. Now, I never realized what a little tempest in a teapot a local stock exchange was until one time when I was in office as Comptroller of the Currency. An insolvent national bank which I had closed in a large city owned, as I remember, several millions of stock in a mining concern which was intrinsically worth, as near as I could ascertain from the reports of the experts and the examinations which I had made, about 17 cents on the dollar. I have forgotten at what price it originally went into the bank, but my duty as custodian of the assets was to get the honest price for the benefit of the depositors. The receiver of the bank, whom I had appointed, came to me and said: "Two or three brokerage firms want to market this stock and they say if we will leave the matter entirely in their hands they will sell it for what it is worth." It was quoted, we will say, at about 4 cents on the Exchange at that time. So I told the receiver to put the sale in the brokers' hands, provided they did not sell the stock at more than it was actually worth, based upon the investigation we had made. We fixed 17 cents as the fair price. After we told the brokers to go ahead there was some excitement on that particular stock exchange. The stock began to go up. It went up from 4 to 6; declined from 6 to 5; rose from 5 to 7; dropped from 7 to 4; fluctuated from 4 to 12; from 12 to 14; from 14 to 10. We had not sold a share of stock in the meantime, nor had anybody else sold any for real money. Pretty soon it touched 17; then went from 17 to 14; then from 14 to 19—and then one of the brokers came over to the office of the receiver and said: "This morning you may offer on the exchange—not $100,000; not $1,000,000 worth of stock—but you can offer 100 shares"—$10,000 at 17 cents, which would mean a $1700 cash transaction. Mr. Chump (alias ordinary speculator) who had been sitting in front of the blackboard of these brokerage offices and paying no attention whatever to the stock when it was inactive at 4 cents, had become interested in seeing it go up and down and, without any detailed knowledge of the value of the property behind the stock, but simply from the gambling spirit, had finally decided that it was good enough for him and commenced to buy it at 17. We could just as well have sold the stock at 30 if we had permitted the brokers to go ahead. The stock, as I remember, was finally all sold at about 17. It has since proved more valuable and I suppose that any of those buyers would tell you what a wise man he was and what good judgment he had shown if you would ask him about the transaction. What an opportunity for the deception of the public is given by our stock exchange! And what chance has the ordinary man, when he can have no confidence in the reliability or fairness of the conditions which underlie stock exchange prices?

THE BOARD OF TRADE.

Now, take it over on the board of trade. They only speculate over there in a limited number of commodities. Why is that? That is for the purpose of limiting the speculative supply so that the prices can be manipulated easier—so that this advertisement to attract the attention of the people outside can be secured at cheaper cost. They speculate in ribs and in lard and in barrel pork for instance—just three of the products of the hog. Hams are just as staple an article as ribs or lard, but they do not speculate in them on the board. Take it in wheat. They eliminate this class of wheat and that class of wheat and speculate in Number 2. Nothing else is good delivery. The whole purpose is to limit the amount of supply of these commodities, stocks and grains, which can be deliverable on the exchange and thereby make more easy this window-dressing of prices to attract the public.

Now, I do not know whether any of you are smart enough to bear this game. I never felt that I was, and I have never tried it. And the lesson to be gained from this is that, when you go on the exchanges, in nine cases out of ten you are playing another man's game. It does not mean that you can't sometimes buy cheap on the stock exchange. At times you can. At times, with a largely scattered stock, an immense crowd of outsiders get frightened and throw it on the exchange, and then values sink away below what they should be. After a pool has sold out at high prices, it is a favorite pastime to create a panic and buy stock back at low prices to form a pool to sell it over again at high prices.

I have seen many people who pride themselves upon their judgment in the matter of stock quotations, of the fluctuations, but I have yet to see the broker—and I have done business with a great many of them in loaning money upon their collaterals and stock exchange securities which they bring in—I have yet to see the broker who would say that over five per cent of his customers ever did a continuing business with him and came out with a profit. The financial mortality of men who speculate on the stock exchange—outsiders—is almost as great as the mortality financially among the people who invest in stocks through newspaper advertising. Don't speculate on the exchanges.

STOCK ADVERTISED IN NEWSPAPERS.

Now let us look at the philosophy involved in buying investments outlined in newspaper advertisements as promising large profits. What is the psychology of that? In the first place you are buying without negotiation. Take these mining stocks, plantation stocks, common stocks of manufacturing corporations which are advertised. You are buying them in the first place without negotiation; and, if ever you did any real trading in your younger days, before you became professional men, or occasionally do any on the side, you know that when you come face to face with a man in a trade, you generally get a better price after a negotiation than you do by simply paying him his price when he first names it. Now, in buying in response to a newspaper advertisement, you buy at the seller's price without negotiation; without the advantage of personal contact; without a chance to see what sort of a man it is who offers you the goods, and whether or not, after looking in his eye, you want to trade with him. Many a time you look at a man who comes to sell you something and decide that you do not want to trade with him. You are buying through advertisements without examination of the property; without an examination of the conditions under which it is offered, and without any of the information which you yourself would want to acquire, if you were going to do business with an individual. There is not a purchase that you make of securities advertised in the papers that you make under the conditions you would impose upon yourself in a private negotiation with a seller whom you did not know. And then we see the familiar method of stock exchange men in these newspaper advertisements. The great purpose of the majority of what we might call the get-rich-quick newspaper advertisements is to distract the attention of the investor from those fundamental principles which should govern every negotiation and every examination into the value of that which he buys. We see in the advertisements: "On the first of May the price of this stock will be advanced ten per cent." Now what is the purpose of that? The purpose of that is to distract attention and to induce hasty action to fix the mind upon a prospective profit, and to so appeal to the avarice as to lessen the inclination to investigate and apply sound common sense reasons to the transaction. I am almost willing to say it is a safe rule never to buy anything which promises extraordinary profits in an advertisement. (Applause.)

Your profession—an engrossing one, a scientific one, taking your time and your energy and your purposes so completely as it does to bring success—is one which would particularly prevent you from the making of purchases along the lines of preliminary investigation which I am recommending; and I have no doubt there are many men to whom I am talking in this room who have bought and lost upon stocks through newspaper advertisements. Now, if anybody has ever got out of such stocks more than interest—there are some preferred stocks which have survived and paid ordinary dividends—if anybody ever made an extraordinary profit out of a stock bought through newspaper advertisements, I have yet to see him, and I have seen many investors. So do not buy investments which are advertised in newspapers offering extraordinary returns.

Now, that does not at all apply to those advertisements of investments in stable securities which give the facts and the statistics bearing upon their safety, the names of the men associated with the enterprise which throws light upon the question of responsible management, and only promise a safe, reasonable and proper return upon money. Not that sort of an investment. The municipal bonds, the high-grade public utility bonds offered by responsible institutions and by banks of standing—I am not referring to that kind of financial advertisements. But I am referring to the sort of advertising promising extraordinary returns that fills your Sunday papers—you are all familiar with it—it hardly needs to be differentiated—it describes itself.

REAL ESTATE INVESTMENTS.

My friend, Mr. Otis, and I have many discussions over real estate investments, and sometimes I philosophize with him and he with me on that question, because I tell you, ladies and gentlemen, it is a great problem to give advice as to how to safely invest surplus savings. In considering the question of real estate investments I want to point out some of the dangers and some of the philosophy which, to my mind, should be indulged in in connection with them. There is a great deal of money lost in high buildings, stock in which, principally in the east, is being offered to small investors. Now the monopolistic value of real estate is in the ground floor. Let us discuss the down town office building proposition first. It is in the ground floor and basement only that you have a practical monopoly in real estate. You can get only just so many store rooms on a city square and so many basement rooms with access to the street. But the minute you go above the first or second story the supply of equally desirable rooms can be almost indefinitely duplicated. You can build two stories or you can build twenty stories. I do not know what the building restrictions are now in Chicago, but say in New York. And the man next to you can do the same and the people owning the balance of the block can do the same. The result of that is when you get above the first floor you are getting, in a sense, into a competitive business, but with this difference and disadvantage, that in the ordinary competitive business under the law of supply and demand, as the demand falls off the inducement to increase the supply diminishes, and the supply decreases, and there is a quicker adjustment between supply and demand; because, as I have just said, when the increase of the supply ceases to be profitable it stops and the demand catches up with the supply. But in office buildings in depressed times when your town is overbuilt—and the tendency always is (real estate being a favorite form of investment) for the supply to keep pace with the time of greatest demand—in the office renting business, in such times, you have got a constant supply and a decreasing demand.

You are really worse off in times of depression than is the man who is in a competitive business. His business will adjust itself to returning prosperity quicker than yours will. Beware of stock in high office buildings. I suspect that the high office buildings of New York have been one of the greatest sink-holes for the loss of money that they have had down there, for when a change in the form of a safe investment means a permanent lowering of the rate of return, other things being equal, it means a loss of wealth. Now, how opposed to the ordinary idea that statement is to one who has not studied the question. The most of us look at these great office buildings, with their great rental returns, as most profitable investments. We constantly hear about the great success the Rookery has been; of the success of the Railway Exchange Building, and some other buildings, their large rate of investment return generally depending upon some special condition or some especially favorable purchase, or lease of the ground. I am not speaking of exceptionally low leaseholds, and I am not speaking of those forms of city investment which the shrewd man and which the adroit man and the courageous man every time will make better than you and me, but I am speaking of the ordinary building erected upon leased ground, the lease taken at the ordinary current rental rate. I would not buy any stock in any such office buildings.

WHAT TO BUY.

There is a very general desire on the part of people who accumulate a surplus to make something else besides three per cent interest; and it is perfectly proper that they should have that desire. A man gets three per cent in a savings bank account and for the great majority of people either that is the safest place to put their money, or in a good municipal bond or first mortgage railroad bond or first mortgage public utility bond, or some of those secure investments backed by value which give an ordinary interest return, say five per cent. But there are still a number of people who insist upon trying to make a larger return than five per cent. Now how can they do that? What is the rule? Well, I racked my brains quite a while to find out a rule which I could safely give those people who came to me, as they sometimes would, asking, "How can I do better than five per cent?" and I repeated them a story. There was a man I knew who had a comparatively small but quite prosperous business, and one of the leading bankers of this city came to him and said, "Mr. So and So, I want to invest some money with you in your business." This gentleman was quite surprised, because he did not do business at this man's bank, and he did not know him intimately, and he said to him, "Why do you ask to invest your money with me?" "Well," the banker said, "I came to you because I have joined in some outside ventures with large business men, and I have invariably lost money, and the reason, as I figure it, that we have lost money is because we men who are successes in our individual lines of business go, four or five of us, into some outside enterprise, and no one of us gives it the proper attention—no one is educated in the particular business; and what is everybody's business is nobody's business—and as a rule the management is left entirely in the hands of somebody who is outside of our guidance. And in the second place, even if he is not outside, we cannot properly guide him, and so my experience is that when I invest with the large business man in outside business ventures I lose money. I am so firmly of that opinion that if Marshall Field had asked me to go into the stove manufacturing business or any outside business, I would not have put a cent in. But if Marshall Field had asked me to put some of my money into his own business I would not only give him all I had, but borrow more to do it."

Now, out of that incident I deduced a rule, and that is, if you are going to try to make over five per cent, invest your money with the man who is a success in the business in which he has succeeded. Now that is not an easy thing to do always. In the first place, the large business man who has succeeded, when he wants additional capital in his business borrows it and gets it at a low interest rate. It is too expensive for him to take small amounts of money as capital in his business and divide up a portion of his profits. It is very hard to make that sort of an investment. It can be made at times, and it is about the only way, gentlemen—it is about the only way that I know that the ordinary outside investor can hope to make more than a reasonable five per cent return, and then he has got to take his chances, because if there is one fixed and unalterable rule in business, it is that the usual rate of compensation for capital varies with the risk.

CORPORATIONS.

How many of you stop to think what a corporation really is? A corporation in one sense is nothing but a co-partnership contract expanded to include classes of investors. If I make a contract with you, doctor, by which you and I are to go into business, you to furnish the capital and I to do the work, with an even division of profits over six per cent on the capital invested, and you put ten thousand dollars into the business, you are relying upon a partnership transaction and it is comparatively a simple affair. Now, underneath every corporation in existence lies a contract something like that. And it is a fair contract or it is an unfair contract. Now that contract between the doctor and myself being a matter of negotiation, I needing his money and he needing my efforts, is a perfectly fair contract. There is no question of watered stock about it. You want me to run the business and you trust me with your money; I give you a first lien on what your money buys, to-wit: the business and its property. I give you six per cent on your capital first, and then we divide extra profits evenly. The wise man in investments is a man who always seeks to extract the underlying contract from every corporation. Now how many of you do that? I will show you, in these mining stocks for instance, how easy it is to cover up with a corporation an absolutely fraudulent contract, and how, when you buy those stocks, you accept contracts—in other words, become parties to a contract which, if a man would ask you to sign up, expressed in the simple terms which would pertain to a contract between you and that man as an individual, you would have absolutely nothing to do with him, if you did not turn him over to the police. Now take this contract I have with the doctor, and express it in a corporation. Ten thousand dollars six per cent preferred stock for the doctor. Then since we divide evenly the profits over six per cent, twenty thousand dollars of common stock—ten thousand dollars to the doctor and ten thousand dollars to me—and since he wants me to control the business of the corporation, the preferred stock is not to vote, and I would receive, say, one share more than him of common stock. Now that carries out our contract, because the control of the corporation stays with me by agreement just as it would in the partnership contract between us. But when I want a million dollars for my business and the doctor has got only ten thousand dollars to invest, I make that proposition not in the form of co-partnership with him, but to Mr. A, Mr. B and Mr. C, and other people who collectively can furnish me a million dollars. I offer a million dollars six per cent preferred stock under those same conditions, without the voting power, and give as the division of the profits half the common stock to these people, the rest, with one share over as a majority, going to me, in order that I may control the business, as is desired by all. Watered stock in nine cases out of ten represents the location of control as desired by the investors. It is not issued, as a rule, for the purpose of defrauding people—to sell them something at a higher price than it is worth; not at all. The master manipulators of our exchanges don't need watered stock in order to get money away from a fool. (Laughter.) The United States steel common stock is watered, as it is ordinarily understood. The Standard Oil Company stock is not watered, or was not before its separation into constituent companies (to the very great profit of the stockholders of the Standard Oil Company, under the mistaken corporation program of the administration), but before the very great addition to its value which has been made by mistaken efforts to reform business conditions under the Sherman Anti-Trust law, it was not a watered stock and it was quoted at about six hundred dollars. Do you suppose it is any more difficult to manipulate stock of the Standard Oil Company that is not watered than United States Steel Company stock which is watered? The relation of the intrinsic value behind the stock has little to do with the prices which are quoted upon the Stock Exchanges, if the stock is manipulated. The intrinsic value of the property behind the stock has everything to do with the real value of that stock, and nobody is going to be safeguarded if you prevent stock watering. You take a losing business and in a year the stock, paid up at one hundred cents to start with, can represent one hundred cents loss on its value and thus be wholly water, or a successful business and in a year the stock can represent two hundred per cent of value. If you take your dollar marks off the stock and let each certificate represent a certain fraction of the whole property and business, there is probably not a stock manipulator in the country who will object, and you would take out from under these demagogues who go around and preach about the millions that have fraudulently been taken from the public by watered stock every prop that they have to stand on.

A man should never invest in the stock of a corporation unless he understands the fundamental contract which underlies it, for under every corporation there is a fair or unfair contract. Now let us see how they swindle the people in the mining corporation propositions, for instance. We will say, doctor, as between you and me, I having a mine and you $50,000 which I want to get to develop it, that a fair division of profits between the money at risk and the mine is one-half to each; that I, furnishing you the opportunity, am entitled fairly to one-half the prospective profits, which will come from the development of the mine which your capital makes possible. Now we can express that contract in a corporation of this kind; we issue $100,000 stock; $50,000 of which represents your money and $50,000 which represents mine. That is a fair proposition. Now supposing I was a dishonest man and I wanted to make a dishonest proposition and invite a large number of people to participate in that investment under unfair conditions I would capitalize that mine for $500,000, $450,000 of which I would take for the mine, and then I would advertise $50,000 of treasury stock for sale at par, and I would be very careful to follow the same plan, I think, if I was dishonest enough to indulge in that sort of thing, that these mining advertisers do and emphasize the fact that none of this $50,000 stock was sold for anything but money which would go into the development of the mine. Well, now, how would a man land who took that $50,000 worth of stock? He would have a one-tenth interest in the mine when that money was paid instead of one-half. I talk with a great many people who lose money in these things, and I really don't see how anybody can safely invest in any of these advertised stocks, as I said before, which promise an exorbitant rate of profit.

I do not think the dentists of a town or the physicians of a town or the professors in our universities are any more gullible than the bankers—sometimes when I see the medicine that the bankers take I think it is easier to sell bad patent medicine to a banker than it is to sell bad investments to a dentist. (Laughter.) But I have exposed some of the weaknesses of the financial profession, and I do hope, gentlemen, that the next time I get in your hands you will remember it and treat me kindly. (Applause.)

The chairman then announced that Mr. Dawes would no doubt answer any question which any of the audience felt disposed to ask, and several took advantage of the opportunity. In response to the inquiries which were made Mr. Dawes said:

REAL ESTATE MORTGAGE LOANS.

The real estate mortgage loan is a good thing. Of course, one has to be careful. The rule that the insurance companies sometimes put in force as to farm loans is a very good one, which is to loan forty per cent of the value of the land exclusive of buildings. Well selected first mortgage real estate loans are a very good form of investment and a man can very safely realize five per cent on them—very seldom over five per cent. But be careful of suburban real estate loans and second mortgages, because suburban values are not so stable and most of the money that is lost on city real estate loans is lost on suburban mortgages and second mortgages.

Question: How are real estate values arrived at in loaning money?

Mr. Dawes: We have appraisers of real estate, who go out and look at it and value it, men who are experienced in building and real estate values. If the case is one of a building loan, the man who makes the loan keeps track of the cost and the contracts and the condition of the building as it goes up. The safe way to buy these building mortgages is to go to those people who make a business of it, because nothing in the world so fortifies one as experience. The knowledge which comes with long experience is a great asset. In buying real estate loans I would go to the oldest and best loaning establishments.

Question: Is the assessed valuation any criterion to go by as to the value of the real estate?

Mr. Dawes: That is one of the elements, of course. But the assessor may have been bribed, or may have got an entirely wrong valuation on it. There may be a dozen things to influence that assessor's judgment. He may have been a very good friend of the man whose property he is assessing. You can go to the official records and find the recorded value of the property, but that is only one evidence of the real value. The presumption is that it bears a fixed relation to the true valuation, but that is only one thing, and a small thing in estimating the real value.

Question: It is always too low, is it not?

Mr. Dawes: Yes, it is always too low, that is, as compared with the real valuation. Well, I would not say always. I know a western town where I had some real estate (laughter) that I got while I was acquiring experience, which I let them sell and keep for taxes. (Laughter.) You cannot always tell; but, of course, as a rule the assessment is below the real valuation.

PUBLIC UTILITY COMPANIES.

Question: How about these public utility companies? Take the Commonwealth Edison Company, which is willing to give you a seven per cent income. Why are they willing to give you seven per cent when the money in the market is only worth four?

Mr. Dawes: I will tell you about that. I am in the public utility business somewhat myself. The natural monopolies are generally a safe place to invest your money; transportation, lighting and heating. Take the Commonwealth Edison Company, for instance, which supplies electricity to Chicago, the construction requirements for that company owing to the tremendous increase in its business are enormous. I have known Mr. Insull, whom I look upon as one of the foremost men in the world in the electrical business, ever since he started in with the Commonwealth Edison. When he first came to Chicago I was interested in the gas business in Evanston. His company, I think, had then about $1,000,000 capital, as I remember. Mr. Insull tells me that the capital requirements of that company within a fixed number of years (not very long) are going to be in the neighborhood of $100,000,000. The Commonwealth Edison Company can make very profitable use of money in keeping its construction up to the requirements of this rapidly growing city. The Commonwealth Edison Company has financed itself with stock issues rather than by bonds. If the Commonwealth Edison Company with the large volume of net earnings it has, had wished to issue more five per cent securities, or even a four and a half per cent securities and sell them in the lower money markets of the East or abroad it could have gotten its money cheaper from the corporation standpoint than by offering new stock pro rata to the stockholders which pays a 7 per cent dividend, but I think this latter method is by far the best way for the Commonwealth Edison Company to finance itself. I think it causes a fairer distribution of earnings in the community and keeps more of them at home to finance that way. It also keeps the ownership at home, and creates a larger local constituency to support the company when unjustly attacked. Anybody who is making money will, other things being equal, be more willing to pay a higher rate of interest. This is one reason why in newly developed parts of the country a higher rate of interest sometimes prevails. I think the Commonwealth Edison is an extremely safe and well managed company and makes proper charges for depreciation. In the public utility companies, generally, the item that the public does not have its mind on is depreciation. I am not altogether sure whether in the electrical business, as a whole, enough for depreciation is being charged off. The result is if the proper amount of depreciation has not been charged off, that when the bonds mature or franchises expire, there is likely to be trouble, as was the case with the Union Traction. In the Chicago Railways Company franchise the city has guarded against that by providing in the franchise the amount of the earnings which must be devoted to depreciation and to keeping up the property. Now, when that is done the public by stock watering or by bond watering cannot suffer by having money divided which should go to repairs. I am one of the five trustees who vote the stock of the Chicago Railways Company, which has gross earnings of say seventeen million dollars. I warrant you you cannot tell me what the amount of capital is. It is only one hundred thousand dollars. That is all the stock there is of the Chicago Railways Company. That property, as a property giving good service, will be protected for all time because there is a fourteen cent depreciation charge which has got to come out of the net earnings before any bond interest or stock dividends can go to any of the owners of the property.

I think well of public utilities. Of course, in that business again there has been some tendency to get away from real values through excessive stock issues and the impression of values which can be created by the payment of too large dividends. The personal equation comes in somewhat as to whether the men in charge of the business are honest. Of course, there is a chance to get fooled on the public utility business, but when it comes to losses it is well to remember that as a result of the panic of 1893 over fifty per cent of the railroad capitalization of the country went under receivership, while less than one per cent of public utility capitalization did so. The difference may not be so marked next time, because there has been some improper exploitation.

LIFE INSURANCE.

Question: Say something about life insurance, Mr. Dawes.

MR. DAWES: I do not know much about life insurance. I certainly regard it as a good thing. I think every man ought to have a reasonable amount of life insurance, not as an investment, but as life insurance.

WHAT IS A SAFE BANK?

Question: How is the public to distinguish between honest and dishonest banks? Let me put my question in a different way. What are the ethics of your profession, so that we can tell the ethical from the unethical bank?

Mr. Dawes: You can tell sometimes, as one of my bank examiners said, when asked the same question. He said, "When I come near a cheese box I can tell whether it contains limburger or not." (Laughter.) In the city of Chicago, a man is pretty safe in his banking relations. After the Walsh failure the clearing house banks got together and they said, "Now, we won't trust to the public to watch us alone, we will watch each other." Every bank in the city of Chicago every year has one or two examinations by the authorities, it has at least one by the clearing house authorities, besides whatever examination it makes by order of its Board of Directors.

And then another thing about the banks of Chicago. The banks of Chicago, as a rule, are loaning against commodities in process of consumption. We have not had here until within the last few years, the vast accumulation of surplus—we are beginning to get it now—that they have had for very many years in the Eastern cities, and in the Eastern cities they loan, somewhat more than we do, against fixed values as distinguished from quick assets. They have built our railroads and mills and things of that sort. We are loaning very largely against grain and packing house products and to manufacturers on cash assets and merchandise in process of consumption. The only way that you can tell an honest man that I know is by his past record and by the way he treats you. It is pretty hard for a man to be dishonest in the banking business in Chicago. I think most of them have moved out.

PRIVATE BANKS.

Question: What would you say about these private banks?

Mr. Dawes: I am chairman of the committee that was appointed by the President of the State Bankers' Association, to propose a bill to stop this unsupervised private banking in the state. Now, it is a very great evil. There are over five hundred of these private banks not subject to any supervision at all. Anybody can open a private bank and get a lot of furniture and brass railings and select a name and open up for business. Our Trust Company has been made receiver of several of these private banks, and in one of them there was not left $200 of assets. That scoundrel had run away with about $25,000 of the savings of laboring men and women. There should be a law passed in this state which at least makes supervision compulsory. It must be a law which is carefully drafted, because there are 517 private banks I think now doing business in this state, and if we enact a law that would require drastic changes in the form of private banking assets, we are going to ruin a great many solvent institutions, because the condition is not so bad in the country districts where the private banker is trusted because he is known. Here will be a private banker who owns $100,000 worth of farm lands and has accepted on deposit $20,000 and has no quick convertible assets, but this land that will bring, if not forced to a sacrifice sale, $100,000. Now, if the legislature should pass a law and say in three months this man must incorporate with $15,000 cash capital, and impose other restrictions upon the nature of his assets, you might force him to sell property at ruinous losses. And it is quite a problem as I see it to draw a law up with fairness to these private banks all over the state. But the reform has got to come and what we want to do in that committee is to try to suggest a law so fair in its regard for the rights and interests of honest private bankers that it will receive their support. That is the problem we have before us. But that reform has got to come in this state in time. The suffering that we come in contact with among the customers of these failed private banks is pathetic. In the case of the one on Wilson Avenue, and the other one on the West Side there was practically nothing left for the depositors. These men would have stolen the safe if they could have carried it off in time.

PRESIDENT'S ADDRESS.*

BY T. G. PATTERSON, D. D. S., GENEVA.

Gentlemen:

To the members and friends gathered together for the thirty-ninth annual meeting of the American Dental Society of Europe, I tender the heartiest of greetings. Would that I could thank you in fitting words for this great honor conferred upon me; but I am not an orator and I cannot follow in the footsteps of my predecessors, who have charmed you with graceful speeches. Hoping that you will pardon my shortcomings I shall endeavor to be as brief and as much to the point as possible.

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*Read before the American Dental Society of Europe, April 1912.

I have wondered if my election to the presidential chair was your tactful method of removing me from the secretary's desk. In saying this, I do not mean to insinuate that my esteemed predecessor, Dr. Cooper was so elected, in order that the lure of the cash box might be taken from him, when he so ably managed the exchequer.

It is my sad duty to report the death of Dr. C. M. Wright, an honorary member, who was taken from us on November 15th, 1911. He was the last surviving member of that well-known handful of men, who founded this society after a memorable meeting on the Rigi in 1873. Dr. Wright was our first Recording Secretary and held the offices of President, Vice-President and Treasurer most successfully. At the time of his death, Dr. Wright was Professor of Physiology and General Pathology at the Ohio Dental College. Two other honorary members have also been taken from us. I refer to Dr. E. Peter Doremus of Cannes and Dr. L. D. Shepherd of Boston. I must also record the loss of Dr. J. G. Brigliotti of Paris and the lamentable death of Dr. William Thiersch of Basel. Dr. Thiersch was only an applicant for membership, but he had written a scientific paper for this society.

The American Dental Society of Europe is now ending its fourth decade, and in that time the progress of dentistry has been almost miraculous. In forty years it has developed more than any other branch of medical science, with the possible exception of surgery. Rapid strides have been made since the establishment of the first dental college and year by year the importance of the profession is becoming more and more widely recognized.

By virtue of the necessity of his work, and owing to the high degree of artistic achievement he has reached, the dentist must be ranked between the surgeon and the general practitioner. His field is one of the most important in the scientific world and I predict that in time he must become the most necessary professional member of the community.

I think that I can truthfully say that among the special branches of dentistry, such as prosthetics, crown and bridge work, porcelain and gold inlays, orthodontia, pyorrhea, oral surgery and oral hygiene, that the one which is of the greatest importance to us is oral hygiene. This is the age of reform movements, and among them, what is more vital than the problem of hygiene? Hygiene is absolutely necessary to health in general; to life itself. As an ounce of prevention, hygienic precaution is worth more than millions of dollars sunk into hospitals and clinics, as a pound of cure. Without sunshine, fresh air, cleanliness and antiseptics, doctors are as naught. If people were scientifically clean, taking the necessary exercise and eating the proper kind of food, old age pensions would increase and octogenarians would not be exceptional.

Hygiene, the science of preserving the health, and prophylaxis, the science of preventing disease, must ever go hand-in-hand as the most valuable assistants of the doctor. As a large percentage of all diseases enter the mouth, oral hygiene must mean better general health. We have many clinics today, where work of an indifferent character is done; where the inexperienced student practices at the expense of some poor unfortunate, who cannot pay for proper treatment. Not until the municipality is willing to pay fair salaries to conscientious men, for expert work, can we hope for the most effective results from oral hygiene. "The dental hygiene movement in America is very active; almost every local society in the State of New York alone, is organizing itself as a school for dental hygiene, where children's teeth are properly cared for, and instructions in preventive dentistry offered." To enable us to contend with the general fear in which we are held by children and the masses, tactfulness, courtesy and gentleness are the best weapons which we can employ.

It is difficult to bring to the notice of the public, the necessity of scientific cleanliness. Instruction must be given to all classes, to teach them the importance of treating and cleaning the oral cavity for prophylactic purposes. Already hygienic demonstration has proved most excellent. To illustrate—last October on the Tennessee health train going south, there was an exhibit of oral hygiene. This exhibit from Rochester, had already been to the Pacific coast and had successfully brought to public notice the need of dispensaries and had given instruction in starting them. It also had circulated pamphlets and Mother Goose rhymes adapted to dental uses and calculated to interest and benefit children. The International

Exhibition of Hygiene, held last year in Dresden, did much in spreading the propaganda. Gentlemen, in conclusion, are we, as one of the most dignified and important dental societies, doing all that lies within our power, to place before the public, the necessity of oral hygiene? I sincerely hope so, and gladly avail myself of this opportunity to urge you to help this worthy cause.

To all those committees and to the various officers, who have so untiringly and successfully prepared for our instruction and entertainment, I offer congratulations and felicitations. May the future decades of the American Dental Society of Europe show as good results of those of the past. May its influence ever be stimulating and wide spreading. Thanking you again for this honor conferred upon me, I surrender the rostrum to those, who are far better enabled to fill it than myself.

LOCAL ANESTHESIA.*

BY DR. W. M. COOPER, FRANKFURT ON THE MAIN, GERMANY.

Mr. President and Gentlemen:

In all the advances made in the science of Medical Chemistry in recent years, it is hardly an exaggeration to say that one of the most important to the dental profession has been in improving our local anesthetics. I wish I could say standardizing a local anesthetic, but the personal equation enters so pointedly into this subject that until now it has not been possible to produce a drug which in like doses, will give like results in all cases. And it is this point of difference which makes the practice of local anesthesia so interesting. Each case must be diagnosed and treated in its own way; and it is this extra sense which tells the operator that this patient must have but a one-half of one per cent solution while another requires a full one or even two per cent solution which designates the successful practitioner of this branch of our science.

The man who assays local anesthesia must be a careful, keen observer, cool headed, sure of himself, and not too modest in putting very personal questions to his patient; for a little persistent inquiry into the patient's past and present history will often save much trouble and unpleasantness if not real danger. That there is a danger must never be forgotten for the drugs we use are poisons pure and simple; and while they give great benefit to both patient and operator if used in proper proportion they may prove very disastrous if not used with discretion.

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*Read before the American Dental Society of Europe, April 1912.

Some ask, "Why use local anesthesia when you can call in a physician to administer a narcotic and thereby be relieved of all responsibility?" Local anesthesia has for us immense advantages. It is a great time saver. We avoid the use of mouth props. The operation can proceed from start to finish without interruption. There is less loss of blood, due to the anemia of the part upon which we operate. Less chance of choking by flow of blood into the throat. No distressing nausea. The patient may be placed in the position most advantageous for the operation and being conscious, is always under the command of the operator.

Probably the most important point is the decision if the patient is to receive an anesthetic or not.

Personally, I would not inject a patient with heart affection even if ever so slight. An anemic patient, a consumptive, an epileptic, or an hysterical one.

Diabetic and arterioselerosis patients may be treated, but only by a very light dose—one-half of one per cent solution. Alcoholic patients must also be handled with care.

I should state here that I never use cocaine for injection, but Novocain-Suprarenin. Novocain is claimed to be eight times less poisonous than cocain, and if used according to the following technique will give great satisfaction.

If on examination the patient shows signs of nervous anxiety because of the operation a tablet of "Bromural" is very beneficial, but in such cases it is necessary to wait half an hour to get the effect of the drug. It is important the patient should remain quiet during this intermission, so should not be sent away to return at the specified time, but should be supplied with something interesting to read or an opportunity to write.

The syringe should be entirely of metal and so constructed as to be easily dismounted and thoroughly boiled, and the boiling should be done in distilled water. The needle should be small in diameter, sharp, but not with a long bevel to the point, as this long fine end is too apt to break, or what is nearly as bad, buckle so as to seal the syringe or form a hook and when being withdrawn to lacerate the tissue and cause bleeding and an escape of the solution. I prefer a long flexible needle, and always use a new one; for they rust very easily and become brittle, increasing the chance of breakage a hundred fold.

After the syringe and needle have been thoroughly sterilized they should be washed out with absolute alcohol and slightly warmed to evaporate any excess spirits and then immersed in a steril solution and kept there until the patient is seated and ready for the injection. After the syringe is filled turn it so the needle is pointing up, jar it slightly and expell the air, but take care not to touch the needle with the fingers or let it come in contact with anything that will mar the point or render it septic.

The patient should be given a glass of hydrogen-peroxid 2 per cent, and the mouth rinsed thoroughly; then with cotton rolls and napkin in place the tissue where the needle is to be inserted is painted with iodin—this dries the tissue and renders the point of insertion antiseptic—and is best applied by means of pellets of absorbent cotton wound on wooden toothpicks, a number of which should always be at hand. When the insertion is made pay attention that the bevel of the needle is parallel to the bony plate and not opposed to it, so the solution will be forced towards the periosteum and not away from it. A few drops of the solution are injected and the syringe held firmly in place for a moment. When the needle is withdrawn do not let it touch the lips or cheek of the patient or your own fingers. After the needle is free place the fingers over the puncture to seal it and prevent an escape of the solution, use a slight rotary motion or massage which tends to distribute the solution and help asborption. My experience leads me to inject as high or low as possible. In the upper arch the first insertion is well over the third molar, the second above and between the apex of the cuspid and first bicuspid then palital and buccal until the whole region is infused. By the lower arch the first injection is in the region of the inferior dental foramen and the next in the region of the mental foramen, then lingual and buccal until the entire field is covered. Now comes a time of waiting, for from ten to fifteen minutes must lapse before the operation proper should be attempted. This time may be employed in preparation of some minor cavity or the like; but under no circumstances should the patient be left alone, but must be under careful observation. Indeed, it is wise and best to have a third person present, and when possible, a woman, for cases have occurred where the patient has suffered ill effects of the drug and during unconsciousness have experienced the same hallucinations that so often attend the administration of a narcotic. Careful attention should be given for any change in the action of the heart, breathing, twitching of the muscles, transpiration, pallor or dilation of the eyes. The wise operator will always have his restoratives ready at hand, for prompt action in time of necessity may easily mean success or failure.

The greatest danger is from collapse or dental shock. This is more apt to occur by local anesthesia than from a narcotic, for the patient being conscious, though free from pain, may, if of a nervous temperament, and low in point of resistance, react unpleasantly.

When there is a slight indisposition 5 to 7 drops of Validol in a little water is usually sufficient to restore quiet, but in more severe cases, 1 to 2 drops of Amylnitrate on a handkerchief held carefully for inhalation is most beneficial, cold water to face and chest; massage of the extremities and in extreme cases an injection of camphor. Personally, I have never seen a case requiring this treatment.

If in these few remarks I seem to emphasize the dangers of local anesthesia it has not been from a desire to discourage its use, but from a wish to help others avoid some of the pitfalls along the way.

SOME IMPROVEMENTS IN THE MAKING OF PORCELAIN INLAYS.*

BY NEWELL SILL JENKINS, D. D. S., LOSCHWITZ-DRESDEN.

In compliance with the request of the secretary to contribute a paper to this meeting, I am able to offer only a simple record of methods which seem finally to overcome the last slight obstacles to making practically perfect porcelain inlays.

Americans who practice in Europe, and also their European colleagues in general, have been exempt from the dreadful mania of disfiguring patients by placing glittering gold inlays in conspicuous places in the mouth, such as seem to have characterized practice in America since the memorable discovery of Taggert.

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*Read before the American Dental Society of Europe, April 1912.

In the case of members of this Society, this happy exemption is largely due to character and position. No American dentist in Europe obtains a solid practice except through merit of high order. Everything else may be forgiven him except lack of skill, and therefore it has been that, from the beginning, porcelain work has been mastered and successfully practiced among the men who constitute this Society. But we also owe much to the European clientelle. Proud as we are of the great intellectual, political and material achievements of American civilization, we must yet admit that, in such particulars as matters of good taste, and in the general influence of the fine arts and the graces of society, we still defer to Europe. Among the accepted principles of European society is the rule that good taste must not be strikingly violated; but a conspicuous example of departure from this rule is found in the shocking dental disfiguration of great numbers of American patients. Such disfigurement, it is safe to say, occurs almost exclusively in America. I recently learned, in visiting the post-graduate school in Berlin, that it was difficult to find, even among the gratuitously treated patients, any who would allow themselves to be made hideous by visible gold fillings in the front teeth. Therefore, I repeat, we owe much to the aesthetic sense of our European clientelle that we have been able to keep our standard of practice, despite the temptation of the gold inlay, from such degradation. For a degradation it is that, in a land where dentistry has attained such practical and scientific development, and where, some fifteen years ago, there was an enthusiastic acceptance of the porcelain inlay, there has followed, to so great an extent, a relapse to an era of "barbaric gold and pearl." Those of us who have visited America during the past few years have been amazed to find, in all classes of American society, evidences of such disregard of aesthetic considerations as would be inconceivable in any European community.

It is no excuse that many American practitioners have never given themselves the trouble to learn the principles of porcelain work because their patients have not demanded it. The duty of every educated man is to lead, not to follow, and he who deliberately disfigures the poorest of his fellows rather than give himself the trouble of learning how to conceal his art, dishonors himself as much as his profession.

The improvements in the making of porcelain inlays to which I wish to call your attention are the use of glass burnishers and the Körbitz electric furnace.

Some three years ago, Dr. Weber presented his system of burnishing the matrix with glass instruments to the American Dental Club of Paris. It is such a simple and effective device for obtaining a perfect matrix, that one wonders it was not thought of long ago. One takes a glass rod and holds one end over a Bunsen burner until the glass is softened, and then draws it out to the desired thinness and breaks it off. The broken end is then held over the flame again until the point melts and rolls up into a ball of the desired size. The shank can be given any desired curve by holding it over the flame until it softens.

Either in the mouth, or upon a model of the cavity, the foil can be burnished to absolute perfection. Take even a matrix which has been stamped to seemingly an exact fit, lay it upon the model and go over it with a glass burnisher, and you will find how completely the least wrinkle can be obliterated and how much more perfectly it can be made to fit. There is no longer a necessity for employing a press. More quickly and with greater accuracy, foil, very especially gold foil, can in this manner be adapted to any cavity. Even before the advent of the glass burnisher, the more exact fit of the gold matrix led to its extended use, especially in Europe, where it has never lost its supremacy. With the glass burnisher, its superiority is even more pronounced, it being possible to obliterate every fold or wrinkle and to give a smoothness and rigidity which can be obtained in no other way. The gold foil strips off in one piece, leaving the completed inlay a seemingly absolute fit. When such an inlay has been grooved and set in the cavity with an appropriate cement, it leaves no line which, even years afterward, can be detected.

In my visit to the post-graduate school in Berlin, Mamlok, the instructor in porcelain inlays, called in various patients who had been treated with porcelain restorations by the students during the past two years, within which time burnishing gold matrices with glass instruments had been taught. Among them all I could not discover a single dark line, or any evidence of edge defect. When we consider that these numerous operations had been made by practitioners from over all northern Europe, male and female dentists who had come for the purpose of improvement, and that they had all learned to make what seemed to be absolutely perfect porcelain restorations ever since this method had been taught, it is evident that we owe a debt of gratitude to Weber for this simple but most important and practical discovery.

The second point is the vertical electric furnace of Körbitz. In my earliest experiments in fusing inlays, I was convinced of the superiority of the gold matrix, whose possibilities were first discovered by Sachs. It was evident that this matrix, and indeed it is also true of the platinum matrix, needed to be imbedded, and that the porcelain should be melted through heat applied from the bottom, that the contour might be the last to fuse and so the shape be more easily preserved. Therefore I made the gas furnace with the foot bellows, throwing the heat upon the bottom of the melting cup, with an opening for purposes of observation. This furnace has been useful in its day, for, although requiring considerable experience to work it properly, it was founded upon correct principles. It has remained for Körbitz, however, to give us now an electric furnace which is wired chiefly at the bottom. This vertical furnace is of chamotte, with a swinging chamotte cap, which can be used for drying the melting cup and afterwards be easily opened for purposes of observation during the process of fusing, or it may be left open during the entire process. As the heat comes chiefly from the bottom, the porcelain melts first in the lower part of the matrix and flows like wax into its position. At the last melting it should be carefully watched, and with a touch the process can be suspended exactly when the contour is as desired.

By these two methods the technique of making porcelain inlays is not only simplified, but the results thus obtained seem to insure that this beautiful art may now be practiced with greater ease and with scientific accuracy.

PRESIDENT'S ADDRESS.

BY DR. J. D. WHITE, ST. LOUIS, MO.

It is indeed a great honor to any man to be chosen President of the St. Louis Dental Society, the oldest local dental organization in existence, a body founded by men who enjoyed a national reputation at that time and who stood for all that was good in dentistry.

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*Read before the St. Louis Dental Society, January 1912.

They must have looked into the future with the eye of hope and if they made any prophecies as to the growth and enduring qualities of this society I am sure that were they alive today they could not help but look upon our progress and development with pride and pleasure. When we consider that our society has enjoyed a continuous existence of fifty-six years and that we have prospered as a body, it is a record to be proud of. Twenty-five former presidents of this organization have passed into the Great Unknown and those of our older members who knew them could testify to their leadership, their high ideals, their attainments and their influence in the realm of dentistry. I have always revered the older men in dentistry; it is they who were the pioneers, who blazed the trails and brought the practice of dentistry from a state of itineracy and commercialism to its present high plane and standing among the professions. It is more than a satisfaction to me to know that while I have gradually graduated into the presidential chair of this body, inheriting its responsibilities and the work attendant, I do so with a realization that I have a duty to perform to this society and that I am not presiding over a scientific organization for anything in the nature of personal triumph or notoriety, but I am installed here to work, and I trust that when the year has come to its close my record will not have fallen behind that of my predecessors. It is difficult to realize that I have been a member of this society for only seven years. It seems that I have known this body a long time, much more than seven years, and yet the changes that have taken place are truly wonderful. A member said to me only recently, "Well, White, I see you are running the St. Louis Dental Society." Now, I promptly denied the allegation for the simple reason that no one man can run any organization very long without producing in that body a discord that eventually will abort any good influence the society might have, and I explained further, firmly but gently, that at the present moment the St. Louis Dental Society was running itself. There was a time, several years ago, when it was traveling a wee bit slow, behind with the schedule a few minutes, or perhaps we might say that it was just meandering somewhat along its easy-going but conservative way. However, it awakened and its achievements in the years that are recent history to most of you have shown conclusively that this society can and does accomplish things that are worth while to dentists and dentistry.

This society is called a local or district society, and its object, as I understand it, is to better conditions in dentistry, make men that are practicing dentistry better dentists; promote sociability and fraternalism among its members; inculcate in its members a respect for the ethical code; and, incidentally, to afford a common meeting place where the members can hear the latest and newest ideas, either practical or scientific, that make for the better our daily practice.

Yet, do we accept, as an entire membership, these opportunities offered us? Unfortunately, no. I daresay that if the great majority of members of this organization who consistently remain away could only realize that by their attendance at each meeting they were helping both themselves and the society, and last but not least, the essayist and the discussors, they would not fail to come and by their presence enhance the value of these meetings. While our attendance has been uniformly good, it should be greatly increased and some plan should be adopted to increase the attendance. The excuses given by most non-attendants is, "I forgot." The only thing I can suggest for these men is to write on their appointment books these few words: "I have an appointment with the St. Louis Dental Society next Tuesday, February 6th," or whatever the date may be. Another class of our members give as an excuse that it is not worth while to come down here and waste an evening listening to the same old talks by the same old crowd; to which I can only reply that if it were not for volunteer discussions and talks by the same old crowd our meetings would sometimes lapse into a state of apathy that would indeed be sad to contemplate. To these non-attending members I can only say that we urge you to attend; it is as much your society as it is ours; you are entitled to the privileges of the floor, and the day has passed long since when false modesty or timidity should keep a member glued or cemented to his seat, when by a few words in a discussion he might let enough light escape from under the bushel to be of untold value to all of us. This suggestion I make especially to the younger members and I assure you that in this society you will always have a respectful hearing. To the older members I wish to say that we younger men look to you for inspiration, and it is lonesome without you and weather and physical state permitting, we hope to see a more regular attendance of the men whom we look to for counsel.

Our financial condition is excellent, as the reports of our

Treasurer and the Trustees of the Building Fund show, and I wish to congratulate the society for having such an efficient set of men handling our finances. As to our membership, it is gradually increasing and I hope by this time next year that we shall have on our roll every ethical man in St. Louis who is not now a member.

Your Executive Committee is working hard to produce a program. Some excellent papers are promised and we hope to issue a complete program for the year within the next few weeks. I offer as a suggestion that the First Vice-President and two members from the body be appointed to act as a Program Committee to secure talent for the ensuing year. This will relieve the undue haste that necessarily arises in securing papers for the opening meetings and will give opportunity to men who will appear in January, February and March to devote more time to the preparation of their essays or lectures. As the largest component of the Missouri State Dental Society, they look to us for our pro rata on the program. We have done well for the past three meetings; let us keep this up.

We must keep this proposition of the "Care of the Teeth for Poor Children" to the front. Our present committee will be continued and I predict that the time will arrive when we shall win out.

I offer for your consideration the proposition of an all-day clinic followed by a paper in the evening and would suggest the November meeting date for this. A good-fellowship banquet this Spring is something that appeals to your committee. A get-together movement of this nature instills new life-blood into any organization, promotes a closer relationship to one another, and awakens a waning enthusiasm among not a few.

I wish to congratulate our out-going president on the excellent work that he has just completed. No one knows just how much hard work he has done, and yet he has given of his time freely and his display of enthusiasm for his society and its works has been such that I cannot let this opportunity go to publicly accord the praise due him for his running true to form.

In conclusion, I wish to thank you for this honor conferred upon me; I assure you in all sincerity that I do not carry these honors lightly and I hope to be able by my works to show you that your confidence in me is not misplaced. I am your presiding officer, as such I shall serve to the best of my ability. Upon you I shall depend to the greater extent for the success of our meetings. I thank you.

WHAT CAN THE CITY OF ST. LOUIS DO FOR THE CARE OF THE TEETH OF THE INDIGENT SCHOOL CHILDREN?*

BY J. H. KENNERLY, D. D. S., M. D., DEAN WASHINGTON UNIVERSITY DENTAL SCHOOL.

For bringing this matter again before you I have no apology to make. I believe the subject to be of such great importance and the object aimed at of such vital interest to the future of the human race that I would feel myself derelict in my duty as a citizen and especially so as a dentist should I, because of apparent failure of our recent efforts in this work, stop here and forever keep silent on this subject. What has been done in other cities can be done in our city, and you are all aware of the fact that no great movement or reform of any kind has ever been carried to its utmost fruition until after repeated failures and disappointments have been overcome. Let us, therefore, take up this work again with renewed energy, determined that this year of 1912 shall not close without showing something accomplished for the cause in which we are so much interested.

It remains for us now to formulate some definite plan of action by which specific results may be obtained. We are frequently asked why dentists do not do something in the way of caring for the teeth of the indigent children. This question seems perfectly natural since the public expects a certain amount of charity from the medical and dental profession. Yet, I fail to see wherein these children are any more the wards of the dentist than they are of the merchant, the lawyer, the manufacturer or the philanthropist; with equal justice might it be claimed that the clothing merchant be compelled to clothe them or the shoe man to shoe them. The fact remains, however, that the united effort of everyone is demanded in this work and only by such effort can St. Louis live up to her motto, "Some Cities Have a Slogan, St. Louis Has the Goods." If this is so, and she has the goods, then it becomes necessary to deliver them.

The question then is, "How shall this work be done?" If we would be true to our patients, true to our profession, we would never fail to press home these mighty truths while working for our patients. When a patient says to you, "Why dont' you invent some way of filling and extracting teeth without pain," tell them that a much greater good than that could be accomplished through oral prophylaxis. It is not necessary to lecture to our patients on oral hygiene while we are busy working for them, but a few simple facts in regard to the value of the teeth as the organs of mastication and on the relationship of diseased teeth to the general health and their sequences in regard to increased expense in the public education of sick children will usually arouse their interest. When a patient is once interested in this question, he will communicate his interest to his neighbor and thereby spread the oral hygiene movement. The examination of the children's mouths in the public schools is probably the best way of beginning the education of the children themselves in the care of the teeth.

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*Read before the St. Louis Dental Society, January 1912.

Another way in which we can educate the public in oral hygiene is through the medical profession and the trained nurse. When the physician realizes the importance of a healthy oral cavity, he will not only prevent many diseases but he may be able to successfully combat many of those ailments which he is called upon to treat. The nurses especially should be furnished with specific information in regard to the value of sound teeth and a healthy oral cavity in relation to most systemic diseases. The ignorance of oral hygiene by the nurses is often deplorable.

Another factor, and one that I consider of the most importance, is the public lecture. Let us lay aside any personal feeling and select the best man or men we can find and have them go before the educational, civic and other bodies, and give illustrated lectures on this subject. I know of no way by which the value of oral hygiene can be so forcibly impressed upon the mind of any audience as by illustrating the diseased conditions of the oral cavity and their sequences. In my personal experience in this work I have had mothers say to me that they had no idea that such conditions prevailed and that in the future they would see to it that at least their children's teeth were taken care of. Let every member of this society talk to his patrons on this subject. Tell them that a lecturer can be had to talk to the mothers' clubs or any other womans' organization that desires such lectures, for I firmly believe that our greatest help in this work will come from the women of our city, but it is very essential to arouse their interest in the subject.

Another agent, the importance of which cannot be over estimated, is the public press. I believe that our daily press is the greatest medium through which we can effectually reach the public, Therefore, a series of illustrated articles edited by some member of our society and published in the Sunday papers under the auspices of the society would draw attention to the subject and by keeping it constantly before the public it will finally result in inestimable good to these indigent children.

Oral prophylaxis, when considered as a humanitarian principle embraces in its practical application, knowledge and skill for the benefit of mankind. No man should be selfish enough to live for himself alone. He owes something to the community in which he lives. Oral prophylaxis is one branch of dentistry that can be universally applied for the benefit of the public. The intelligent dissemination of the practice of oral hygiene among the public is incumbent on the practitioner. When we consider that in the United States there are 13,000,000 persons of teachable age, we have before us an enormous task which will require the services of every one concerned in the practice of dentistry to help a very small fraction. The 40,000 dentists in the United States who will grapple with this problem can only naturally accomplish a very small part of this work. Nevertheless, it is our duty that at least an effort should be made in this direction and the results thereof will most likely then induce others to take up the work from the very broadest standpoint.

The population of our state is 3,293,335 and we have 1,683 registered dentists. We have in our city a population of 687,029 and 505 registered dentists. In our city there are about 25,000 school children under medical inspection, and if we were to divide these 25,000 by the 500 dentists, it would be impossible for any one dentist to take care of them. The old idea previously referred to that the dentist should take care of these children because he is a dentist is clearly proven by the above facts to be entirely out of the question. It would necessitate the giving up of a man's business and the devoting of his entire life to the work of charity.

Now, the last and most important question of all arises. "How are we to obtain the means to accomplish this work?" All of you who have kept in touch with the progress of this work of oral hygiene know that in every case in which an attempt had been made to carry on this work gratuitously, it has been a failure. There seems but one way by which this work can be started, and that is through the philanthropy of some person or persons of abundant means. The philanthropic laymen of our country must come to the aid of the dental profession if much good is to be accomplished. In conclusion I quote from Mr. W. H. Allen of New York, Director, Bureau of Municipal Research. He says, "Layman is defined as not belonging to a particular profession. Hence, from the standpoint of oral hygiene the parent, physician, school superintendent, lawyer, minister, teacher of physical training, large giver, etc., are all laymen. Their interest, information, and giving will determine chiefly whether the United States will spend ten years or a century in providing the free dental dispensaries that only a few dentists and a few laymen even now appreciate as indispensable to a successful mouth hygiene capaign. While a relatively small fraction of our 93,000,000 population, adults and children, would go to dental dispensaries, even if these were made as free as the streets, it is nevertheless true that the existence of free dispensaries is of immediate personal importance to every one of our 93,000,000 population. This is only one way of saying, that there is no person so rich or so blessed with health that he does not share in the handicap of the person whose deficiency is decreased by bad-looking, bad-grinding and bad-smelling teeth. There are, I believe, men and women in every community who will do this service for their own community, and men and women of larger means who, when the dentist tells the story as dentists are best able to do, will furnish the funds in order that the work may be done."

Regarding the future work in the field of oral hygiene by our Society, I would suggest that a committee be appointed which should be instructed to formulate specific plans upon which renewed activity can be carried on. The most feasible plans, it seems to me, as I have outlined above, are the instruction of the public through the press and from the lecture platform. After the sentiment of our citizens regarding dental hygiene has been once aroused, it will probably be a comparatively easy matter to get the necessary help from the school board, the department of health or through some bequests from private benefactors.

As I have stated in the beginning these few facts are principally intended to keep the ball rolling. While our efforts in the past which were primarily concentrated in one specific direction have met with the disapproval of the authorities in charge of public education, it does not mean that the subject should now rest forever, there are many possibilities which may be tried and ultimate success is sure to come. Then let's get to work.

SOME CONSIDERATIONS REGARDING ROOT PREPARATION AND THE CONSTRUCTION OF ARTIFICIAL CROWNS.*

BY ROBERT J. CRUISE, D.D.S., CHICAGO.

Mr. President and Gentlemen of the West Branch Dental Society:

Hardly had the modest blush faded from the cheeks of our newly-elected president, hardly had he regained his poise as he thanked us for the honor we had conferred upon him, when to my mingled horror, and edification, he approached me with a request that I inflict upon you the first paper of the year.

I say edification, yes, at the spirit of work with which he seems to be imbued; horror, at the idea that I must still work, when I thought that his election would leave me a willing listener instead of a talker, at the conclusion of the past year's humble efforts in your behalf.

However, I acceded to his request that I might put in practice my own doctrine, namely, that to make our Society a success, when called on to help, we must give a willing hand.

We live today in an age when the man who is ready to give consideration to the views of others, no matter how well informed he may be himself, should be designated a Wise-Acre. He who knows it all does not know how ignorant he is, and his fancied knowledge stands him in poor account at all possibility of progression.

It behooves us, therefore, if we would progress to be ever on the alert to get hold of new ideas, and as we look back over the short years since we graduated, be it ten, fifteen, twenty, or more, and realize that there is hardly a single operation which as we ply our daily toil, we perform in the self-same way in which we were taught, we must realize more and more that not to advance is to go backward, and success cannot come to us in any marked degree if we are satisfied to stand still. The great possibilities of progression that surround our work, give to it the very features which make an otherwise most arduous calling, more interesting, the satisfaction of obtaining a good and artistic result brings with it a pleasure entirely unique.

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*Read before the West Side Branch of the Chicago Dental Society, March 1912.

Therefore I believe that it behooves us to read and to listen and to think, and although the adage says that there is nothing new under the sun, I am firmly convinced that there are new ways of doing old things being frequently brought to light and I persistently agree with Horace Greeley, whom I believe is credited with having described a genius, as not of necessity a clever man, but a man who can turn to good practical account the clever ideas of clever people.

Herbert Kaufman says: "You used an idea yesterday, what have you done to replace it? Are you a mental cannibal subsisting entirely on your own brain? Look around you or you won't survive.

The new school gives no diplomas, it never graduates it scholars and therein lies one of its greatest and most attractive recommendations.

But what has all this to do with the subject matter of my paper? Nothing, do you say? Yes, everything. It is the spirit behind my little effort and guided by it I am selfish enough to hope that having considered for a few minutes some of the practical and actual steps in the operations of root preparation and crown construction, we may mutually gather from the discussion that must follow some useful and helpful ideas which will make us feel that we are still students and in the search of knowledge.

I wish to briefly take up the following points:

First, to describe the methods I employ in the root preparation and construction of the so-called gold shell crown.

Secondly, to describe the methods I employ in the root preparation, and construction of anterior porcelain crowns.

Of all operations in crown work, probably the gold shell crown on molars and bicuspids holds the palm in regard to number constructed possibly since the perfection of the gold inlay by Dr. Taggart its popularity has somewhat waned, in the better class of dental practice, but, of course, it remains a standard operation in tooth restoration and deserves our careful consideration.

In the first place let me cite certain facts to be considered when we start to prepare a molar root for a gold shell crown. That root is to be embraced by a gold band that must pass slightly below the free margin of the gum, and it must have a firm hold on the root at its gingival perifery, without impinging on the gum and embracing it at any point around the root. To secure these two points either the enamel must be removed entirely or in a sufficient degree that the band will be allowed to replace it, and present as little as possible the objection of a foreign body. Some authorities lay down the hard and fast rule that when a band is used all the enamel must be removed to secure a perfect fit, but my experience of conditions we find in some mouths, forces me to disagree with them. This applies, I will say in passing, to all the teeth, anterior and posterior, but at the present time we are considering only the molar and bicuspid teeth.

I have not yet discovered any way to accomplish this removal of the enamel without a certain amount of laceration of the gum tissue, and I appreciate most fully that there are some molar roots in which it seems almost impossible to produce the desired condition, especially at the mesial and distal lingual angles.

In many mouths during this endeavor the tongue seems to have grown to twice its normal size, and it is only with a patient and persistent effort with stones and scalers, that I can always obtain the desired result, especially in those difficult locations I have referred to.

As regard the laceration of the gum I consider it the lesser of two evils, for if the root is not properly prepared at this point, the crown acting as a foreign body, is a failure, and on the other hand, nature in her kindly efforts quickly heals the wounded gum tissue, and it recovers from the temporay injury it has sustained.

In preparing a root for a shell crown I do not cut it down low as I formerly did, in fact if it is already badly broken down I build it up with alloy, sometimes with an inlay, to such an extent that it almost articulates with its opponents in the other jaw, and it is after I have done this that I start my operation of trimming it at the gingival as already described. In my further preparation I grind and trim the root with a decide slanting inward form from the gingival towards the occlusal surface, and my reason for doing so is that it is quite unnecessary for the band to embrace the root except at the gingival border, and the proper fit at this point is much more likely to be accomplished when the root is formed in this manner than if it is formed with walls straight up and down or as is sometimes termed parallel.

With the root prepared in the manner described, as well at least as your own health and skill and patience will permit, not forgetting the general disposition of your patient, all important influences in dental operations, the next step is to get the measurement of your root.

For this I use Dr. Silverling's dentometer, which I consider a clever and useful little instrument. I measure the depth of the band with a small piece of paper, being always on the generous side of the measurement for as occasion later requires, it is easy to remove and impractical to add.

At this point let me say parenthetically, sometimes, especially in the extreme posterior part of the mouth, and you can generally tell from a little study of the case, great irreglarity of articulation, renders the cutting and trimming of the band on the lingual side not altogether easy, and a mistake made at this point involves some future complications, when such a case arises I endeavor to anticipate it, by taking a modeling compound bite when my root is just about prepared, this my assistant takes to the laboratory, quickly runs up and has an articulating model for me by the time I am ready to fit my band. In some difficult cases I have found this advance step useful and therefore present the suggestion.

I cut my band a trifle shorter than my measurement, no flare, ends parallel, and solder with 22 kt. solder. I slightly bevel them burnish one end, having given it the necessary concave form at mesial and listal and proceed to fit it to the root. Should my band prove at all too large through any error in measurement or cutting, I seek the cause and rectify it at this point, aiming to have a band that has to be forced on to the root. When satisfied that the band goes under the free margin of the gum all around and is trimmed at its upper end to just avoid the opposing teeth, I make a line exactly at the gum margin with a sharp instrument and removing the band trim it so that it goes beneath the gum not more than from ½ to 1 millimeter, a millimeter being, as you know, the 1-25 of an inch.

The next step is to solder to the top of this band a piece of 36-gauge pure gold, trim surplus, replace band on root, and when satisfied that your band just reaches to point of former adjustment, burnish the pure gold top against the upper surface of the root, remove and sweat a little 18 kt. solder to prevent any future possible distortion and incidentally assist the casting process.

Then replace this cap, I will call it, of poor appearance but good fit and take a modelling compound impression, using a small piece of compound, but large enough to insure its including articulation of adjoining teeth.

Having run up model form balance of crown to contour, contact and articulation and cast.

Sometimes I perform the latter operation in the mouth, as time and circumstances require and permit, but for the most part I prefer to make model and finish later, for I find that I can do things with wax out of the mouth as regard detail and finish that I cannot in the mouth, and I confess that the struggle with the moisture of the mouth in its relation to the trimming and shaping of wax is often disposed to make me peevish and I am inclined to say, "Good enough" before it is time, while in the restful quiet of my laboratory when time permits, I can work peacefully and rejoice that I am far removed from the few cubic inches of the human mouth and the serpentine convolutions of the human tongue.

When a crown made in this manner is completed, it is strong, it articulates accurately, and it goes to place exactly as the original foundation cap went to place when its fitting was completed.

It includes more possibilities of success than a shell crown made by any of the other methods that I know, and I consider that it can be made with far greater accuracy of final fit than the so-called two-pieced crown reinforced with solder, or any of the methods employed in making seamless crowns.

Here I wish to make mention of the advantages of the paralleled band over the flared band, when, as is so often necessary, we must cut the band so that it is much shorter on the buccal side than on the lingual, or the reverse, if the band is flared the measurement of the gingival end is increased and that band while it may apparently fit. in truth it does not, and is creating more irritation to the gum tissue than it should. This does not maintain with the paralleled band where cutting does not alter the gingival measurement.

The skiagraphs that I pass around are taken from a recent number of one of our dental journals. They tell a sad story of misfit with the cruel accuracy of the Rontgen Ray. The bands do not begin to fit the roots that they cover, and stand out with painful prominence from the very point which they ought to be embracing.

I will now pass on to the second part of my paper, namely to consider the methods that I employ in the root preparation and construction of porcelain crowns for the anterior teeth. In this I include the bicuspid teeth on which I put porcelain crowns more often than gold.

I divide the anterior teeth into two classes, in one I put the bicuspids lateral incisors and very badly broken down roots of any of the ten anterior teeth, in the other I put the central incisors and cuspids. For the former my almost universal practice is to use a full cope or band. For the latter I use a combination of a burnished and cast base.

I am here referring to the maxilla where most of our crowning operations are performed, but I might say in passing that my practice as regards the mandible, causes me to put in the first class all the teeth where crowning is indicated, with occasional exception of the cuspids.

Before going into details of root preparation and crown construction in the first class, I want to say a few words in behalf of the much abused band or cope.

I am led to believe that there is something very selfish back of the abuse which the gold band receives from many dentists. The greatest abuse which it does receive which has a painful element of truth about it is the manner in which it is constructed. I have been told by some operators that they have not used a full cope in six, eight or ten years, in bridge work or porcelain crown work. When I hear that I always say to myself, there is another man piling up work for the other fellow.

The proper protection of small weak roots, and roots which are subjected to the particular strain and leverage which for instance comes upon the first bicuspids makes the construction of a protective cope mechanically correct, and I cannot as yet by the assistance of any method that has been presented be led to change my opinion in this regard.

I see continually enough of the disaster that follows in the wake of the bandless crown which has been placed where it is not indicated and that from the hands of men whom I would be inclined to credit with average or more than average care and skill to believe that I have not good ground for my position. This subject may receive notice in the discussion and I shall be prepared to meet all comers.

I will now describe root preparation and construction of a porcelain crown with cope on an upper lateral incisor. I cut the root following the contour of the gum line and letting it stand a little out from the gum line till I have removed all the enamel. Here it is generally necessary to remove all the enamel, and this is more easily done if the root is not cut or ground down too low at first. It is also easier to get the measurement and make the first fitting of the cope if the root is not cut too low. Having accomplished the removal of the enamel I endeavor to smooth the root surface below the gum line with very fine fissure burs and sometimes plug finishing burs.

I then take my measurement and cut a piece of gold 30 gauge from 2 to 3 millimeters in depth. A great mistake is made in cutting bands for copes too narrow. It frequently ends in a misfit and after some time and material has been used up, when this discovery is made the operator is often reluctant about throwing it away and beginning all over again.

The band should be cut short of the measurement and forced on to the root allowed to go from ½ to 1 millimeter underneath the gum, marked with a sharp instrument at this point and removed.

Then the root should be cut just a trifle below the gum line except at the lingual, where it should stand out from the gum from ½ to 1 millimeter. I trim and grind the cope so that it is as near flush as possible with the root all around, and then with a large round bur and small stones I give the root surface a decided concave form.

I solder 31 gauge 22 kt. plate, sometimes 34 gauge pure gold as a floor to the cope, trim, replace on the root and burnish floor against the concaved root surface. Then having enlarged the canal with round burs or Pesso root reamer to receive an iridio-platinum post which will engage the sides of canal, I endeavor at this time to establish its position that will be correct to hold a Davis crown in proper line for articulation with lower teeth and alignment with the central and cuspid. Then I force post through the floor of cope, tack it with sticky wax, remove, invest, and solder. This accomplished I replace it on the root, take wax bite and plaster impression, when time permits I finish crown.

Sometimes conditions permit the grinding of crown so that it can be fitted direct to the cope and cemented on, sometimes to get perfect joint it is necessary to cast to the cope using pure gold.

Lastly I will describe the method that I mostly use in root preparation and construction in the case of good roots of centrals and cuspids. I cut the root to the gum line except at the lingual, leaving it there from ½ to 1 millimeter from the gum line. It is generally necessary to grind the enamel at the lingual so that the burnished base may pass a little below the gum margin without engaging the gum itself. I then grind the surface of the root in concave form, enlarge the canal to receive post and countersink a square pocket extending 2 to 3 millimeters from the center of the canal as the size of the root permits, using for this last operation first large round burs and then large and small fissure burs. I then take a piece of annealed 36 gauge pure gold, cut to proper size and burnish it into this pocket and over the surface of the root, lapping it over the lingual extension, without at this point making any special endeavor to get a detailed burnishing over the root surface. When thoroughly burnished into the angles of this square pocket I pass through it an iridio-platinum post, again endeavoring to adjust the angle of it for the reception of the porcelain crown in proper relation to its neighbors and the articulation. Holding the post in this position I pack around it a few pieces of Alexander's wax gold, cover with a little of Parr's sticky flux wax, remove, invest and tack with 22 kt solder. I now have a base that goes definitely to place on the root, but still requires careful spinning and burnishing to the edges, the former done best with a rapid acting mallet on the engine. It should be burnished over the lingual extension, removed and a little 22 kt. solder sweat over this point to avoid any future distortion.

With the completed base again in place I take a wax bite and plaster impression; and grind the tooth to fit. In this form of crown I invariably cast to the base to get perfect fit with the porcelain.

This method may sound somewhat long and complicated, and in so far compares unfavorably with that which says; "Prepare root, fit post, push crown to place with soft wax, between it and root, chill, remove, trim and cast." However in my hands the longer route leads to a more satisfactory result, and I have seen some very unsatisfactory results following the shorter system. Moreover I must add that with practice this method which takes rather long to explain in detail, can be carried through very quickly.

I wish before concluding to lay special emphasis upon the necessity for a strong attachment on the lingual in upper anterior crowns and the labial in lower anterior crowns to withstand the leverage which is exerted on these teeth in the use that nature intended them for. The incisal force on the front teeth is exerted not directly but at an angle, and too many crowns are constructed for the anterior teeth with little or no regard to this important fact.

There are many other points which I would like to talk about, for it is difficult to lay down hard and fast rules in any dental procedures, and we must be guided in our methods by the conditions that are presented to us to deal with, but I do not wish to take up any more of your time and would rather give myself up to the tender mercies of those who may differ with me, while I listen.

I know that you will accept my effort in the same good spirit in which it is offered, and the consciousness of this is to me ample satisfaction and reward for my little labor of love.

REPORT OF COMMITTEE ON DENTAL SCIENCE AND LITERATURE.*

BY A. M. HARRISON, A.M., D.D.S., ROCKFORD.

This report is gleaned principally from the papers and discussions of the following dental journals: *Dental Summary, Dental Cosmos, Dental Review, Items of Interest, Dental Digest, Oral Hygiene*, and *Dental Dispensary Record.*

Science always relates to something to be known, and art to something to be done; the word profession implies attainments in both as distinguished from mere skill or the pursuit of mere study or investigation.

Dentistry as it relates to the health and general welfare of man is regarded by most people as a mechanical art because skill or manual dexterity is more in evidence than scientific training and learning. However, like all art, the practice of dentistry is deeply grounded in the various branches of learning.

The fundamental principles of the sciences remain fixed, yet many discoveries within the field of science, and many innovations, applied to the field of dental art, render the practice of dentistry a panorama of changes and improvement. Some one has said, "Dentistry is an organic unity formed by the junction of art and science, skill and knowledge." Every advance in any of the sciences upon which dentistry is grounded is immediately shown upon the field of practical achievement in dentistry. The wonderful X-Ray, recently a marvel to humanity, is now used for diagnosis in our profession to locate scores of pathological changes and conditions in the jaws, previously hidden from our perception. A metallurgist discovers a new metal, or makes a combination of metals into a new alloy, and at once the scientifically trained mind of some dentist recognizes the opportunity to employ it to advantage in dentistry, so tantalum an extremely hard and non-oxidizable metal, superior to the best steel, is fashioned into dental instruments. Our Dr. Taggart, not only introduces the process of reproducing a wax model in a metal casting, but also devises appliances for doing this work in an exact and scientific manner, so that our practice is largely revolutionized.

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*Read before the Illinois State Dental Society, May 1912.

How may we be informed regarding all these rapidly changing methods of practice, for many of them have developed since we graduated? Only by attending dental meetings and by the careful study of our dental literature, not limiting ourselves to one or two dental journals, which are possibly read by index of articles.

Dentistry is rapidly moving forward, and we must keep up with the procession, or take the dust of all who are capable, and ambitious to make the most of the opportunities we have to add to the health strength, beauty, comfort and happiness of our patients. Personally I have never enjoyed dental literature as much as during the last year, since I have been studying regularly the journals in preparation for this report. My greatest regret is that I must omit so many articles and passages that are worthy of special attention. My best wish for every member of this society who is not a careful and systematic reader of dental literature is that you may sometime be asked to give a report of this nature. I thought a lemon had been handed me, but it was the most satisfying grape fruit I ever tackled.

"The Prevention of Dental Caries," by J. Sims Wallace, D. Sc., M. D., D. D. S., London, England.

"The Prevention of Dental Caries and Oral Sepsis,"—W. D. Pickerill, M. D., P. L. B., M. D. S., London, England.

This is the Cartwright Prize Essay of the Royal College of Surgeons of England. 1906-10, with some additions.

"American Text Book of Operative Dentistry." Fourth edition —Edward C. Kirk, D. D. S., Sc. D., Philadelphia, Pa.

"The Essentials of Operative Dentistry."—W. Clyde Davis, B. S., M. D., D. D. S., Lincoln, Neb.

"Educational Lectures on Dental and Oral Hygiene."—Dr. S. C. Trigger, St. Thomas, Canada.

"Modern Dental Materia Medica, Pharmacology and Therapeutics." Third Edition.—J. P. Buckley, Ph. G., D. D. S., Chicago, Ill.

"Dental Materia Medica and Therapeutics," Second Edition.—Hermann Prinz, D. D. S., M. D., St. Louis, Mo.

"A Text Book of Chemistry for Students and Practitioners of Medicine, Pharmacy and Dentistry."—Edward C. Hill, Sc. M., M. D., Second Edition by Dr. F. A. Davis, Philadelphia, Pa.

"Theory and Practice of Thyroid Therapy."—Herbert E. Waller, M. D., London, England.

"The Administration of Nitrous Oxide and Oxygen for Dental Operations."—By Frederick W. Hewitt, M. V. O., A. M., M. D.

"Dental Disease in Its Relation to General Medicine."—J. F. Colyer, L. R., C. P., M. R. C. S., L. D. S., London, England.

"Developmental Pathology, a Study of Degenerative Evolution."—Eugene S. Tabott, S. M., D. D. S., M. D.

"A Text Book of Dental Histology and Embryology, Including Laboratory Directions."—Frederick B. Noyes, A. B., D.D.S., Chicago, Ill.

"Local Anesthesia in Dentistry."—Dr. Guido Fisher, Translated by Dr. Richard H. Riethmuller, University of Pennsylvania.

"The Surgery of Oral Diseases and Malformations, Their Diagnosis and Treatment."—Geo. V. I. Brown, M. D., D. D. S., Milwaukee, Wis.

"A Manual in Orthodontia."—B. E. Lischer, D. M. D., St. Louis, Mo.

"A Manual of Dental Prosthetics."—Geo. H. Wilson, D. D. S., Philadelphia, Pa.

"Practical Dental Metallurgy."—James Dupuy Hodgen, D. D. S. Fourth Edition revised by Guy S. Millbury, D. D. S., St. Louis, Mo.

ORAL HYGIENE.

With three dental journals entirely devoted to this subject and other magazines making it a special feature, it is not at all surprising that oral hygiene is this year the most absorbing topic in dental literature. Dr. W. A .Evans of Chicago whom we all know and respect says: "There is nothing more important to the individual than nutrition, and proper nutrition is impossible with diseased teeth and an unhealthy mouth." Dr. William H. Allen, secretary of the

Bureau of Municipal Research says in his book, "Civics and Health," "The individual with decayed, or even unclean teeth, is open to infection of the lungs, tonsils, glands, ears, nose and stomach."

"The Human Mouth and Its Relation to the Health, Strength and Beauty of the Nation," by W. G. Ebersole, M. D., D| D. S., Cleveland, O., published in July *Cosmos*. He proves that tuberculosis which is generally supposed to be the most prevalent and destructive disease known to the human family, is only one of the fearful results of neglect of the human mouth. "Dental Caries" is the most prevalent and havoc-producing disease known to modern civilization. The mouth is the most extensive breeding place for almost all pathogenic organisms. Ninety-five per cent of all tuberculosis infections take place through diseased and ill-kept mouths, and the same is largely true of almost all other contagious diseases. With healthy, well-cared for mouths, used for their intended purpose, mankind need fear but little from the ravages of disease. Millions of dollars are being spent annually to prevent contamination of food, water and air by pathogenic micorganisms, but what have we gained, even though we have destroyed every pathogenic cell, if, before they have a chance to fulfill their mission in building up the body they are permitted to pass through the mouth and become contaminated with the same kind of micorganisms we have spent millions to destroy?

"Dentistry which presides over the gateway to the human body must and will rank with medicine. For years it has been begging for its due recognition, it could not demand this until it had at its command evidence that would prove its value to mankind by facts and figures, reading in dollars and cents. The increased efficiency of the school children of the Marion school dental squad has more than proved the value of caring for children's teeth, and that the state or municipality would save thousands of dollars annually by paying for the care of the teeth of children whose parents could not afford to have the necessary work done."

'History of the Oral Hygiene Campaign as Inaugurated by the Oral Hygiene Committee of the National Dental Association," by W. G. Ebersole, M. D., D. D. S., Cleveland, Ohio, Chairman, published in the December *Cosmos*. Don't fail to read this entire report, for it demonstrates that in health conservation and added efficiency dental services play so important a part that no other profession can equal it in value of services rendered. Among these reports of particular interest, read that of Miss Cordelia L. O'Neil, principal of the Marion school of Cleveland, where the tests were made, also that of J. E. Wallace Wallin, Ph. D., the expert psychologist who conducted the mental tests. I cannot refrain from giving some of the results accomplished by these experiments: "(1) To show the economic value of rational oral hygiene to taxpayer, the community and the nation. (2) Its inestimable value to the individual pupil, the suffering child, in ridding him of the exciting agent of physical pain and disease, of mental stagnation and moral deviation. (3) The vast possibilities which the work opens up to the dental profession in the direction of increased usefulness to the community and in the development of a new vocation for school and community experts."

The fruits of the application of oral hygiene to the dental squad of the Marion school may be estimated from the following facts: "(1) In a class of twenty-seven children, most of whom were repeaters, those who had failed to pass their grades, only one failure of promotion was reported during the year. The class work showed notable improvement in scholarship. (2) A marked improvement in attendance. Non-attendance because of toothache and associated ailments, and truancy were reduced to a satisfactory minimum. (3) The general attitude, disposition, working habits and moral behavior of many of the pupils were very materially improved. (4) The physical condition of the pupils, as shown by general physical appearance, clearness of skin and complexion, and vigor of action, made distinct improvement. (5) Most significant because based upon definite serial psychological tests; given under the exacting conditions of scientific control, the mental efficiency of the pupils showed marked improvement. Of the various mental traits measured the capacity to form such controlled associations as are involved in writing antonyms to a list of supplied words showed the greatest improvement, 84.95% as the average for the entire group. The average gain in the test of accuracy and speed of perception was 56.21%; in spontaneous association test 47%; in addition 38.8%; in test of memory span 33.31%. The average gain in all tests amounts to 99.8%.*

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*The average of the percentages given appears to be 52.05% instead of 99.8 as stated.—Editor.

"Experiments in Oral Euthenics—An Attempt Objectively to Measure the Relation between Community Mouth Hygiene and Intellectual Efficiency and Educational Progress of Elementary School Children," by J. E. Wallace Wallin, Ph. D., Pittsburg, Pa., published in April *Cosmos*. This is the first of a series of articles by the man who was director of the psychological research work of the National Dental Association at Cleveland, Ohio, last year and promises to be very interesting to students of oral hygiene.

"Oral Hygiene" by W. F. Jackson, D. D. S., Cleveland, Ohio, published in September *Dental Summary*. This paper was read before the West Virginia State Dental Society, and together with the discussion is one of the most interesting papers of the year. Dr. Jackson was a member of the Oral Hygiene Committee in the Cleveland, Ohio tests.

"The National Mouth Hygiene Association" is the new organization brought about by the Oral Hygiene Committee of the National Dental Association at its last meeting. Dr. Horace Fletcher, the great chewing specialist, was elected president, Dr. W. G. Ebersole, secretary and treasurer. The object is "to have the teeth of school children examined at stated intervals; to have school children's teeth properly cared for; to promote the general preservation of the teeth; and a moving picture campaign by L. L. Zarbaugh of Toledo, for the education of the public as to the care of the teeth."

"Tuberculosis of the Orapharynx" by William H. DeFord, D. D. S., M. D., Des Moines, Iowa. This is an interesting series of articles running from September to January in the *Dental Digest*.

"Necessity of a Dental Education of the Public," by W. C. Davey, D. D. S., Morrisburg, Ontario. Read before the Women's Institute and published in *October Dominion Dental Journal*. This article contains many interesting facts available for arousing interest in oral hygiene.

"The Establishing of a Free Dental Dispensary," by William W. Belcher, D. D. S., Rochester, N. Y., published in October *Cosmos*. Rochester through such men as Dr. Belcher, is doing things and we may confidently expect some particularly valuable data from the experiments now in progress in their Free Dispensary, one of the best managed in the country.

"Care of the Teeth," by H. C. Sexton, D. D. S., Shelbyville, Ind., published in *September Summary*. This was a talk given before his local high school, and contains excellent material for any one desiring to address high school scholars or teachers.

"Dental Clinics and Dentist for Schools," by Dr. C. Klein, Ulm, Germany, published in June *Cosmos*. First Dental Clinic for school children was established at Strassburg and Darmstadt, 1902. "The school dental clinic teaches oral hygiene as well as examines the teeth at unexpected intervals, in this way the percentage of the pupils who gave sufficient care to the cleaning of the teeth was raised from 33% to 66%. When the examination slips were signed by the parents and returned to the clinic the teeth of the poor were treated free. Their chief object was to stop the toothache so the pupil could receive full benefit of school instruction."

"The Greatest Thing in Oral Hygiene," by George W. Clapp, D. D. S., New York, published in January to July *Dental Digest*.

"Oral Hygiene in Germany is supported by the community. The examination is made, recorded and reported to parents; almost one third of the children are sent to their own dentists, the fee being about the same in the school clinic. (1) Germany desires good soldiers; she has learned it is best to begin with the child and build its body sound and strong, that it may be sound at maturity, either as a soldier or a possible mother of soldiers, therefore, anything that will surely build strong bodied citizens interests the imperial government. (2) Germany has an Insurance Association which insures to everyone a pension in old age. Every child enters the association at fourteen years of age, and becomes an asset or liability. Hence they are interested in watching over the child from the cradle upward, in order that he may enter the association sound mentally and physically. (3) The school masters in Germany are interested in the health of the child that he may do his work easily and promptly; this is the third body of watchers over the German child."

Certain German scientists, not dentists, have proved the connection between bad oral conditions and certain serious diseases: "Oefele showed that bad oral conditions are closely related to appendicitis, and catarrh of the gall ducts; Moller of Berlin, the connection between defective teeth and tuberculosis, and that persons with defective teeth are much more susceptible to tuberculosis. Pfluger showed that people with fistulous abscesses from decayed teeth are sources of danger to themselves and everyone with whom they are associated. Dr. Rose showed that children with defective teeth are much less able to perform the work of the school room." Hence it became easy for Jessen at Strassburg, Koehler in Darmstadt, Ritter in Berlin to persuade these cities to establish clinics where children could be examined and the need of the poor could be met. Over an hundred of such clinics are now in operation, in more than half the city pays all expenses. Germany is convinced of the enormous value of oral hygiene to the health of the child and through him to the community and pays no attention to the financial side, about which we seem especially interested.

"The Canadian Oral Prophylactic Association—What It Is," published in April *Dominion Dental Journal.*

The association was organized January, 1906. An effort was made by a committee to ascertain from the manufacturers the composition of the various preparations used in our practice, "nothing doing." Then analysis was made and "almost all the pastes contain elements that contribute to dental caries, such as sugar, starch, honey and simple syrup." An effort was made to have some drug company manufacture "Hutax," the name given by the committee to a dentifrice with none of these deleterious components. Their dentifrice is now manufactured by Lyman Brothers and their tooth brushes made in England are sold by Hargraves Brothers, Toronto.

"A Practical Lecture Propaganda," by Albert H. Stevenson, D. D. S., Brooklyn, N. Y. Chairman of Committee on Public Health and Education of the Second District Dental Society, published in April *Oral Hygiene.*

There are three ways to convince the public, we are altruistic and have an honest desire to improve conditions of the human race other than in private practice. They are: "the free dental clinics, dental exhibits and public lectures." The committee has prepared lecture outlines to interest the following class of audiences, mothers' clubs, children, two for nurses and physicians.

"Newark Dental Clinic Association," by Wentworth Holmes, D. D. S., Newark, N. J., published in April *Oral Hygiene.*

This is an outgrowth of a free dental clinic established in 1909. Now owing to New Jersey's good democratic governor and wise dental legislation the city appropriates five thousand dollars per year to support the dental clinic. They have two clinics with four men, each serving one half day for six days per week and receiving five hundred dollars per year. The lady attendant at each clinic keeps records, assists the operators and receives ten dollars per week. There are four consulting dental surgeons having charge of operating, surgery, mechanical and orthodontia departments.

"The Oral Hygiene Problem," by George E. Hunt, M. D., D. D. S., Indianapolis, Ind. Read before the Chicago Dental Society, and published in February *Review*. One of the best papers on this subject and should be studied by all. He does not believe in dentists maintaining free dental clinics, that is the duty of the city or state. "The natural outcome of this movement will be compulsory care of the school children's teeth by the state where the parents cannot afford to have it done. The great economic problem will prevail; shall our children grow up to be full powered, or partial or non-producers. When we can take charge of the children at five years of age, either in private or school clinic and carry them on to fifteen with commendable mouth conditions, and a knowledge of mouth hygiene and better than all else a knowledge of what to eat, how much to eat and how to eat it, the human race in this country will have taken a lon gstride toward perfect efficiency."

"The Dentist-Guardian of the Gateway of Nutrition," by S. M. Stauffer, D.D.S., Pittsburg, published in February *Dental Summary*. An excellent article which should be studied by every dentist, for we should know what to advise mothers to feed their children while their teeth are being developed. Stockmen study carefully to obtain a properly balanced ration in feeding for growth or for market; but the average child, sometimes even the infant, is permitted to eat anything on the table that may suit his fancy or tickle his gustatory nerves. "Foods rich in soda and lime salts such as cabbage, spinach, onions, beets, cucumbers, potatoes, asparagus, rice, apples, oranges, nuts and whole wheat bread should be given the developing child."

"Extensive meat diet produces uric acid, our soggy starchy breakfast foods which are bolted without being masticated and mixed with saliva are often not digested, but ferment and poison the system. Overeating and eating too many kinds of food at one meal should be discouraged." Our motto should be "Eat to live, and not live to eat." We cannot reform the appetites and eating habits of our adult patients, but we may influence the mothers to teach the child what is best for him, not only for the sake of his developing teeth but his growing body, and the habits that are to determine to a great extent his character when a man.

"Mouth Breathing," by Bessie Burns Bennett, D. D. S., Baltimore ,Md. "Mouth breathing is not always a habit, but often a danger signal telling us of something wrong with the air passages; enlarged tonsils, adenoids, nasal polypi, atrophic rhinitis, that demand prompt correction before serious harm has been done to the normal position of the permanent teeth."

PYORRHEA-PROPHYLAXIS.

A large number of articles have been written the past year on these two closely associated subjects, among them the following are particularly worthy of mention:

"Some Recent Views of Pathology, Prevention and Treatment of Pyorrhea," by Thomas B. Hartzell, D. D. S., Minneapolis, Minn., published in October *Dominion Dental Journal.*

"Cause of Pyorrhea, Influence of Dental Operations," by W. H. McDonald, D. D. S., L. D. S., Toronto, published in March *Dominion Dental Journal.*

"Pyorrhea: Etiology and Treatment," by Dr. L. C. Burgard, Louisville, Ky., published in February *Summary.*

"Pyorrhea and Prophylaxis," by F. H. Skinner, D. D. S., Chicago, Ill., read before the New York State Dental Society, published in January *Cosmos.*

"The Necessity for and Training of a Prophylactic's Assistant," by Alfred C. Fones, D. D. S., Bridgeport, Conn., published in March *Cosmos.*

"The Introduction of Oral Prophylaxis into a Dental Practice," by Robin Adair, B. S., M. D., D. D. S., Atlanta, Ga., published in December *Summary.*

"Prophylactic Value of Potassium Sulfocyanate in Saliva," by Dr. F. W. Low, Buffalo, N. Y., published in November *Cosmos.* Do not fail to read Dr. E. C. Kirk's editorial on Dr. Low's paper in the same number of *Cosmos.*

"The Relations of the Mouth Conditions to Bodily Health—What the Dental Profession Needs," by Edward H. Baker, M. D., Chicago, Ill. Read before the Chicago Odontological Society and published in March *Review.* This physician points out the need of collecting scientific data, systematic research on a large scale concerning mouth conditions and especially pyorrhea. "If dentists will do this they will rival the physicians in becoming the most important men in the community. They can become the greatest of benefactors to the health and life of the human race."

The *Dental Review* for July is a pyorrhea number with the following articles by well known specialists.

"Pyorrhea Alveolaris; Etiology and Instrumentation," by John D. Patterson, D. D. S., Kansas City, Mo.

"Prophylaxis in Relation to the Disease known as Pyorrhea Alveolaris," by Dr. Cyrus M. Wright, Cincinnati, Ohio.

"Diagnosis and Prognosis of Pyorrhea," by William H. G. Logan, M. D., D. D. S., Chicago, Ill.

"Some Phases of Pyorrhea Alveolaris and Its Treatment by Bacterial Vaccine," by George B. Harris, Sc. M., D. D. S., Detroit, Mich. An interesting article on this phase of treatment was published in February *Items of Interest,* the discussion of this paper in same issue is worth reading.

"Beginning of Pyorrhea Alveolaris—Treatment for Prevention," by G. V. Black, M. D., D. D. S., Sc. D., LL. D., Chicago, Ill., was read before the second District Dental Society, New York, and published in June *Items of Interest.* A carefully written article of this most thorough investigator and should be studied by every member.

Another article along the same line of investigation was read January, 1912, before the Chicago Dental Society and published in April *Review.* Dr. Black's conclusion is that in the formation of calculus a deposition of agglutinin is a prerequisite, and this is a product of some fault in general metabolism going on in the body which ought to be corrected. This he thinks will probably be accomplished after sufficient observation by a number of persons. In speaking of local treatment he says: "No medicine at all is the best treatment, and especially no antiseptic whatever should be used, absolutely no tooth powder or paste of any sort should be used." Cannot you hear some of our prophylactic friends say: "Now what do you think of that?"

"Autogenous Vaccine in the Treatment of Pyorrhea Alveolaris," by G. D. Layman, D. D. S., Indianapolis, Ind., published in July *Cosmos.* "Just how these protective elements which we call antitoxins are formed in the blood and tissue juices, their chemical nature and how they really accomplish their work we have yet to learn, but we are learning, and believe with Pasteur: 'It is possible for man to eradicate every contagious disease from the face of the earth.' We know that white blood corpuscles—the phagocytes—guard against invading disease germs but we did not know why the phagocytes sometimes failed to win the battle. It now appears that their success depends largely upon the presence in the blood serum of elements called opsonins which act upon the bacteria in such a way as to render them an easy prey to the phagocytes. In pyorrhea the autogenous vaccines are made from the cultures taken from the diseased area of the patient to be treated." Dr. Charles C. Volker in the March *Items of Interest* under the subject of "The Scope of Prophylaxis in Dentistry" calls attention to the danger of autogenous vaccine for pyorrhea. "About twenty per cent of persons exhibit intolerance of injections of antitoxin serums," hence the treatment should be undertaken only by one who thoroughly understands the process and the possible dangers.

"The Technical Treatment of Peridentitis," by N. S. Hoff, D. D. S., Ann Arbor, Mich., published in June *Cosmos*.

All inflammatory and pathologic conditions of the gums, peridental membrane and alveolar process he includes under the name "peridentitis." The ordinary stages and varieties he designates as "traumatic," "infectious" and "idiosyncratic." His treatments are classed as "preventive" and "rescue." Under the "rescue" treatment he classifies the different stages of the disease as "cervical," "parenchymatous" and "suppurative."

"After Treatment of Gingivitis," by Thomas B. Hartzell, M. D., D. D. S., Minneapolis, Minn., published in April *Dominion Dental Journal.*

TREATMENT OF DENTAL PULP AND ROOTS.

"Diagnosis of Disease of the Tooth Pulp," by Hermann Prinz, M. D., D. D. S., St. Louis, Mo., published in August *Review.*

He gives an excellent classification of the diseases of the pulp as a working basis for the application of rational therapeutic measures.

"The Rational Treatment of Chronic Alveolar Abscess with Root and Bone Complications," by J. P. Buckley, Ph. G., D. D. S., Chicago, Ill., published in August *Review.*

"Some Experiments in Treating and Filling Root Canals," by George W. Cook, M. D., D. D. S., published in August *Review.*

This article and the discussion that follows it are well worth reading.

"Selection of Root Filling Materials," by A. E. Webster, M. D., D. D. S. L. D. S., Toronto, published in July *Dominion Dental Journal.*

HISTOLOGY.

"Calcification," by R. R. Andrews, D. D. S., Cambridge, Mass., was read before the New York State Dental Society and published in the January *Cosmos.* Dr. Andrews was awarded the eighth Jarvie Medal.

This article contains the latest and most authentic research work upon the earliest stages of tooth development, formation of enamel, dentin, and cementum, and observations on calcification in living cells.

"Some Recent Investigations upon the Histology of the Dentin," by C. F. Bodecker, D. D. S., Berlin, published in March *Review.*

"Relation of the Teeth to the Development of the Jaws," by Frederick B. Noyes, A. B., D. D. S., Chicago, Ill.

"Bone is produced in response to mechanical stimuli. Adult jaw bones are the results of all the forces exerted upon them and distributed through their substance by the occlusion of the teeth. If the occlusion is normal the forces are perfectly balanced and a harmonious and symmetrical development is the result. The preservation of the normal occlusion is necessary, therefore, not only for the proper mastication of foods but for the proper development of the face and proper functions of respiration and swallowing."

"Dental Radiography," by Howard R. Raper, D. D. S., Indianapolis, Ind. He gives a series of articles beginning in the June *Items of Interest.* In the December number he begins illustrating the use of radiograph. "(1) delayed eruption; (2) where deciduous teeth are retained abnormally, to learn whether the permanent teeth are really present; (3) to learn whether the roots of children's teeth are fully formed; (4) to learn whether the tooth is a temporary or permanent; (5) to determine when to extract a temporary tooth; (6) to show the orthodontist when he may move the coming permanent tooth by moving the temporary tooth; (7) to observe moving teeth; (8) to determine whether the root is perforated; (9) impacted teeth; (10) to determine number of canals; (11) to aid in filling canals; (12) cases of supernumerary teeth; (13)

pulp stones; (14) chronic abscess or pericementitis, etc.," on up to sixty-three, surely a wide field of usefulness.

"Pathological Changes in the Jaws Resulting Incidentally in Impacted Teeth and Other Disturbances, with Especial Reference to the Use of X Ray in Diagnosis," by M. H. Cryer, M. D., D. D. S., University of Pennsylvania, Philadelphia, Pa., read before the British Dental Association at London, England, and published in October *Cosmos.*

"Roentgen Rays in Dentistry," by G. E. Pfahler, M. D., Philadelphia, Pa., published in August *Dental Summary.*

FILLING MATERIALS.

"Amalgams: Their Manufacture, Manipulation and Physical Properties. Cements: Their Manipulation and Physical Properties," by C. M. McCauley, B. S., D. D. S., was read before the National Dental Association at Cleveland, Ohio. One of the best articles on amalgams and cements reported the past year and well worth reading. His conclusions that "to obtain a perfect filling a scientifically balanced alloy must be used, such an alloy runs from 72.5% to 75% silver with 27.5% to 25% tin, depending upon the purity of metal as found in the market. One point or 1/1000 of an inch shrinkage would produce a ditch sufficiently wide to allow from three to six microganisms to enter side by side. Of what value are the alloys offered us by some of the supply houses which have a shrinkage of fifteen to twenty points?"

"Amalgams," by C. C. Corbett, D. D. S., Edwardsville, was read before the Chicago Dental Society February, 1912, and published in May *Review.* Our most worthy president thinks there has been enough said and written about the technique of various filling materials to have increased the operating efficiency of the profession 100% if the members had studied and put into practice the advice given, but little attention has been paid to the advice regarding amalgam, so the operating efficiency for amalgam is one hundred per cent behind that for the more esthetic filling materials. He sent letters of inquiry to two hundred dentists, eighty in Chicago, one hundred and twenty throughout the state, asking the dentists to count all fillings, including inlays, on twenty consecutive pages of their ledger or index cards and figure the percentage of amalgam fillings. He received seventy-three replies with percentages ranging from thirty to ninety-one, with five running below fifty, three just fifty, leaving sixty-five of the seventy-three whose practice runs over one-half for amalgam. Outside of Chicago the average for amalgam 64.49%, including Chicago, 59.5%; hence he concludes amalgam is now the most important filling material known to the profession, and with the added interest in oral hygiene movement more people of limited means will have their teeth filled, hence there will be an even greater demand for this material. He advised using a cement lining under the amalgam, and as great care in inserting and finishing the filling as you would give any other filling material. If we all used the care that Dr. Corbett's work and records show he used with amalgam we should no doubt meet with the success the material deserves, the fault lies in careless manipulation.

"Artificial Enamel," by William Hynes, D. D. S., Stanton, Ky., published in February *Summary*. He recommends the conservative use of Aschers enamel in labial and proximal cavities in the anterior teeth where the cutting edge is not involved.

"Silicate Cements," by Harry Watson, D. D. S., Grand Rapids, Mich., read before the Michigan State Dental Society, and published in May *Summary*.

PORCELAIN INLAYS.

"Porcelain Inlays vs. Silicate Cements," by L. E. Custer, A. M., D. D. S., Dayton, Ohio, published in March *Summary*. He says Schoenbeck's Phenakit and DeTreys's Synthetic silicate show less discoloration than others, silicates have the advantage in cavity preparations, no cement line, better matched shades and small cavities. Porcelain has advantage in durability, where mass can be secured, and in hard usage.

"The Cement Line in Inlays," by Clarence Grieves, D. D. S., Baltimore, pulished in November *Summary*.

"Porcelain Inlay: Its Present Status and Why It Should Be More Generally Used," by W. T. Fickes, D. D. S., Pittsburg, Pa., published in January *Summary*.

"A Plea for the Return to the Use of Porcelain Inlay," by Frank E. Cheeseman, D. D. S., Chicago, Ill., published in March *Items of Interest*.

"Cast Porcelain Inlays," by F. S. Welden, D. D. S., Brooklyn, N. Y., published in September *Items of Interest*. The wax impression same as for cast gold inlay is covered and invested with a mixture of magnesite and plaster with a small amount of pure refined silica. The porcelain is cast into this extra hard mould, but is after all only a glass filling.

CAST GOLD INLAYS AND BRIDGES.

"The Gold Inlay," by J. V. Conzett, D. D. S., Dubuque, Ia. Some excellent suggestions where a buccal or a lingual cusp has been broken down on biscuspids, published in August *Items of Interest.*

"Scientific Casting of Gold," by W. H. Taggart, D. D. S., Chicago, published in July *Items of Interest.* In which the inlay wizard shows some more appliances to facilitate the making of scientifically perfect inlays. Among these appliances are: (1) the electric automatic wax warmer; (2) automatic investment mixer; (3) an electric investment mixer attached to lathe; (4) an automatic gas burner for removing wax from the mould.

"Casting Methods and Casting Devices," by C. S. Van Horn, D. D. S., Bloomsburg, Pa. He says, "no casting machine now on the market is both scientifically and mechanically correct." His ideal combines electricity, oxyhydrogen blow pipe, pyrometer and partial vacuum, but it has not yet been evolved.

Another article by the same author entitled "Standardizing the Investing Process and Simplifying the Casting Process," published in October *Cosmos,* is interesting.

"The Influence of the Casting Process upon Construction of Crown and Bridge Work," by H. J. Goslee, B. S., D. D. S., Chicago, Ill., published in June *Cosmos.* This article should be studied by all who are inclined to be over enthusiastic in using cast inlay abutments for bridgework. The uitility of the Goslee crown and bridge teeth, which are a valuable addition to that branch of dental work, is also demonstrated.

"Something in Crown and Bridgework," by A. W. Thornton, D. D. S., L. D. S., Toronto, published in April *Dominion Dental Journal.* A good article by a conservative operator.

PROSTHESIS.

"Some Neglected Features in Dental Prosthesis," by W. E. Crummer, D. D. S., L. D. S., Toronto, published in July *Dominion Dental Journal.* Very few articles on this subject were published.

COCAIN.

"Modern Methods of Producing Local Anesthesia," by Hermann Priz, M. D., D. D. S., St. Louis, Mo., published in February and March *Summary*. An excellent article and should be read by every member.

"A Case of Acute Cocain Poisoning, Nervous Symptoms Predominating," by E. Ballard Lodge, D. D. S., Cleveland, Ohio, published in January *Dental Summary*. The author of this article was the victim. Report of the physician who administered the cocain is also given, making this an interesting article.

ORTHODONTIA.

"Universal Method of Orthodontia by Means of Removable Appliances," by E. W. Briner, D. D. S., New York City. This is a series beginning in March *Summary*. A simple and ingenious appliance composed of German silver wire gold plated with vulcanite portions to retain the appliance in position. The lingual pieces lying close to the roof of the mouth, curved palatal spring wires are used to expand or contract the arch laterally, the labial wires for moving the front teeth lingually and the lingual wire for moving the same forward.

"Orthodontia," by Dr. Raymond J. Wenker, Milwaukee, Wis., published in November *Review*. It is a good article on this subject.

"The Question of Extraction in Orthodontia," by Calvin S. Case, M. D., D. D. S., Chicago, Ill., published in March *Cosmos*, is a well-written article by a recognized expert.

EXTENSION FOR PREVENTION.

In the January *Cosmos* Dr. W. R. Clack of Mason City, Ia., reviews a paper entitled "Wherein Clinical Evidence is at Variance with Extension for Prevention," by Dr. P. R. McCullough of Philadelphia. Dr. Clack is one of the members in the justly noted G. V. Black Club of St. Paul. It is not only instructive but also amusing to see how Dr. Clack cuts out the defective reasoning, mistaken ideas and arguments that have nothing whatever to do with extension for prevention of recurrent caries. One can scarcely refrain from wondering "how long, oh, Lord," before more of the good dentists down east will comprehend and practice "extension for prevention of recurrent caries."

"Excavation for Preservation"—A reply to Dr. W. R. Clack by John Philip Erwin, D. D. S., Perkasie, Pa., published in April *Cosmos*. He warns against "fanatical extension." "How satisfactory," he says, "when working on frail teeth to excavate to preserve. How unsafe to extend to prevent. The former method insures to the operator the best results possible while the latter means the death of the pulp." Do you suppose he thinks "extension for prevention of recurrent caries" means to cut only toward the pulp?

"Is Operative Dentistry Degenerating?" by James Truman, D. D. S., L. D. S., Philadelphia, Pa., published in April *Cosmos.* He enters the "extension for prevention" controversy, claiming that "extension for prevention" and "immune areas" are dangerous catch phrases. He supposes for illustration a pin head cavity upon the proximal surface of a lower molar, then he extends the cavity to lines of immunity, where brush and tongue will cleanse, under the gum margin, and upon the grinding surface cutting out all fissures, and terms it fearful destruction of tooth issue. From a study of the recent Chicago Dental Society program he finds only three gold filling clinics out of a total of ninety-six while eleven are devoted to gold inlays. He things "gold inlays are the lazy man's makeshift and will bring eventual discredit on our profession."

"Failures," by Dr. E. K. Wedelstaedt, St. Paul, Minn. His discussion of failures deals with the mesial surface of the upper first molar. "We make dental operations for the specific purpose of prolonging the usefulness of the human teeth for the greatest possible length of time. When we find a failure of this kind provision should be made for doing away with the condition that brought it about," which I infer in Wedelstaedt "sprechen" means "extension for prevention of recurrent caries."

BUSINESS BUILDING.

"Service Selling Talks," by W. F. Davis, D. M. D., New York. These articles, beginning in the October *Dental Digest,* contain some points worthy of consideration and certainly helpful to young dentists in beginning their practice or to one who has been practicing for several years and who, from lack of business ability or training, did not start right. "Brother Bill's" letters are along the same line. We may not need or care to use all his suggestions in establishing and maintaining our practice but they are well worth studying. Anything in our dental literature that will help to develop us into better dentists, able to render more efficient services to our patients, that will give us confidence in our ability as up-to-date dentists and will help to inspire that same confidence in the people we meet, is well worth our most earnest attention.

"Dentists as Spenders," by A. G. in November *Digest*. He reviews the lives of several noted dentists whose earning capacity ranged from twelve thousand to thirty thousand dollars per year, yet at the end of their lives, instead of having all the comforts to which they were accustomed in their palmy days, they were in want of the actual necessities and had to depend upon the generosity of friends. There must be a definite relation between the receipts and expenditures and this relation must be known. Sensible business methods in the management of a practice are demanded.

"Business in Dentistry," by Edward E. Haverstick, St. Louis, Mo. "The dentist should study himself to see what he has that will truly recommend him to his patients, also what he may lack to satisfy them. The patient is willing to pay liberally for good work, sound judgment and honest advice. It is how good, not how cheap, that pleases the right sort of people." He makes a careful estimate from the original investment in a dental education, the running expenses, salary, etc., in determining what a dentist should charge per hour for his time.

UNCLASSIFIED ARTICLES.

"Sterilization in Dental Practice," by L. E. Custer, B. S., D. D. S., Dayton, Ohio, was published in February *Summary*.

He urges closer attention to sterilization, thereby increasing the respect of our patients, and at the same time preventing infection. A clean office, clean body and hands, sterilized instruments are demanded today, and we honor ourselves and our profession by practicing sterilization in all its details. Denatured alcohol has been proved one of the very best sterilizers for instruments.

"Tantalum, a New Metal in Dentistry," by A. S. Van Teslaar, D. D. S., Chicago, Ill., published in December *Review*. Pure Tantalum resists completely the action of all except fluoric acid, all alkalis, and of moisture at ordinary temperature. It is tough in the form of wire, has a great field of usefulness in filaments for electric lamps, consumes about one-half the electric energy the carbon filament requires. It is alloyed for use in dental instruments except for broaches, root canal probes, etc. When reheated and hammered, tantalum sheets one m. m. in thickness, subjected to diamond drill rotating five thousand times per minute, showed a depression of only .25 m. m. after three days of continuous boring.

"Henriette Herschfeld, D. D. S., and the Women Dentists of

1866-73," by James Truman, D. D. S., L. D. S., Philadelphia, Pa. An interesting paper concerning Henriette Herschfeld of Berlin of the class of 1869, Pennsylvania Dental College; Lucy Hobbs Taylor, Cincinnati, Ohio, of the class 1866, Ohio Dental College, the first woman graduate dentist, and Marie Gruber of Berlin, of the class 1872, Ohio Dental College. These were the three pioneer women dentists whose strong characters were tested and proved worthy in their efforts amid great opposition to secure a dental education.

"Compensation of Professional Services and Compensation of Services Rendered the Profession," by Dr. Edmund Noyes, Chicago, read before the Winnebago County Dental Society, and published in the September *Review*. "The winning of lucrative practice depends more on a man's personality, good character, intelligence, pleasing manner, cleanliness, good taste in dress and office equipment, polite consideration of his patient, that is good salesmanship, than upon professional ability, though the latter is an important factor and should not be neglected by any means." He says of Dr. G. V. Black, "There are a greater number of men doing a greater number of things in a better way in consequence of his researches, discoveries, inventions, teaching and example than can be said of any other man of our profession." The results of his researches and inventions have been given without compensation to the profession. "Concerning the propriety of obtaining compensation for services to the profession by means of protective monopoly conferred by patent laws there are in our profession radical and for the present at least irreconcilable differences of opinion. There are but few rights or privileges that can be separated very far from some duties that correspond to them; and a good man or a good profession should be quite as careful to perform the duties as to claim the rights."

"Patents and Patent Litigation of the Dental Profession, Past and Present," by Dr. J. N. Crouse, Chicago, Ill., was published in November *Review*. No one is better fitted to discuss this subject than Dr. Crouse, because of his many years' service to the profession along these lines. The present patent case of Dr. Taggart, of particular interest to us, is fully discussed.

"Evolution of Dentistry," by S. G. Perry, D. D. S., New York, read before the National Dental Association, Cleveland, Ohio. The reading of this paper is sure to make one glad he is a dentist, and earnestly desire that he may faithfully perform his part, so the upward progress of dentistry may be increased by his individual efforts. This is one of the last papers Dr. Perry wrote, as he died last December. He certainly did his part for the advance of dentistry.

"Immunity and Susceptibility of the Teeth to Caries," by Russell W. Bunting, D. D. S., Ann Arbor, Mich., was read before the Third, Fourth and Ninth District Societies, New York, also before the Missouri State Dental Society.

After reviewing the works of Miller, Black, Law, Waugh, Gies, Hinkins, Kirk, and others on this subject his conclusions are: "That our knowledge of the subject of immunity and susceptibility of the teeth to caries is made up of a heterogeneous collection of facts, pseudo facts and theories, so that we agree with Dr. Kirk, who says: "The whole process is a sealed book." We find that in the young, caries runs riot, and when the age of maturity is reached the teeth are no longer attacked by caries with the same severity. Then, in middle age individuals who had no caries for many years have a number of cavities suddenly appear. These changes from immunity to susceptibility and vice versa are in their nature so obscure they remind us of the general property of the body which determines its resistance against infection. The existence of such a substance in the saliva with its nature and its source is yet to be demonstrated. Much as we are inclined to look for this tangible something, which we can point out as the predominating factor, it is more probable there are several factors acting in the same or opposing directions to cause caries. It has been seen that caries is directly dependent upon the amount of infection present in the mouth, upon the carbohydrate food elements habitually remaining about the teeth, and also upon the masticatory efficiency of the mouth and teeth. Added to these may be the influence of the structure of the teeth and the reaction and composition of the saliva. We know that by proper mouth prophylaxis, by modern reparative measures and regulation of the diet we may restrict the action of caries in the average individual. Thus by mechanical measures we produce a partial or complete immunity in spite of unfavorable conditions which may be existing in the mouth. Until a better method is found we must continue to fight caries by the best prophylactic and reparative measures we can command. In the meantime let us all follow the slogan of the *Cosmos*, *"Observe, Compare, Reflect, Record."*

PROCEEDINGS OF SOCIETIES.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held February 13, 1912, with the President, Dr. J. G. Reid, in the chair.

Dr. J. E. Hinkins read a paper entitled, "Arsenical Poisoning."

DISCUSSION.

DR. E. H. BAKER:

This paper brings up several very interesting points, and one thing that interested me very much was the description of the action of arsenic; that its action was universally deleterious. I think the showing of pharmacology tends more and more towards the belief that the use of drugs has been too free in the past, and oftentimes it has been difficult for us to determine what these drugs do because our methods of examination are very crude. But where we can find out what they do, it appears they do something that is undesirable. So that the tendency is growing to use less and less drugs.

Another thing that interested me was the consideration of what arsenic does to the teeth, and what the use of arsenical paste does in devitalizing teeth in the mouth, particularly with reference to their permanency. Does the use of arsenic tend to interfere with the live fibers which hold the teeth in place? It seems to me that it would be very much in order to look into that question and find out what the life of a tooth is after it has been devitalized by the use of arsenical paste.

There is another thing that struck me in the paper, not particularly in reference to the use of arsenic, but the essayist speaks of cases that were referred to him by a physician. The physician is supposed to take charge of all parts of the body, and yet here was a case of arsenical poisoning that came to a dentist to have the diagnosis made and to analyze the secretions. In reality he did the work of an expert analytical chemist. That brings to my mind the question of the relationship of the physician and the dentist and disease. Recently, I have been thinking somewhat about that, and I have thought this: Disease has its beginning and its end; and up to a certain point after the beginning of disease, there are no gross lesions apparent. If the patient goes to a physician, the physician is likely to make a few crude tests which he has at his command, and if he does not find the patient's liver enlarged, if he does not find albumin or sugar in the urine, if he does not find any particular change in the blood, he is very likely to say to the patient that, "as nearly as I can find out, you are as sound as a dollar." Yet the dentist knows that there is a condition of disease going on in that patient, and he can see it. It is evident to him that the disease may be progressive, and it may be a thing that will be very serious later on. But something should be done before it has reached that extremely serious condition, perhaps an incurable stage, when nothing can be done towards a cure, and the patient is ready for the final offices of the physician, the druggist, the minister, and the undertaker. Previous to that time the patient does not see a doctor, but he does see a dentist; and the dentist finds out things that are not right with the patient. If the dentist should send such a patient to a physician, the physician is likely to say, "I cannot find anything wrong," and then it is up to the dentist to find out that there is something seriously wrong, while the physician may not be able to do anything. It seems to me, that here is a point where the dentist has a duty to perform. He considers, perhaps, that he must not go beyond the distal border of the third molar and, of course, if he undertakes to examine the tonsils, or for adenoids, he must speak of that in a rather apologetic manner. But the natural field of dentistry extends beyond the mouth. The mouth is in reality one of the most important parts of the human economy. It is the gateway of almost every disease or infection. Many cases of disease can be traced to conditions in the mouth. And when this phase of the subject is really worked out, we will find the mouth is much more important than we have ever suspected.

Dr. Black's work is showing the effect of over-eating, and the changes that take place are determined by the kind of food that is eaten. His work is interesting along this line. People must eat food that will excite a flow of saliva, that will clean the teeth and give them exercise, and the dentist is interested in these things. I believe Dr. Black has opened up a most important subject by his observations, because what reason is there to suppose that the calcific deposits are found alone upon some hard smooth surface in the mouth? What reason is there to suppose that they cannot occur upon the edge of the valves of the heart or upon the coatings of the arteries and other places, causing degeneration and calcification?

I heard a talk not long since as to whether the dentist was the tail end of the medical profession, whether he was a member of the medical profession, or whether he was going to be a member of a separate profession, and it was said that dentistry had only to do with mechanics. But, it seems to me, that the dentist is going to have a line of his own; and that line is going to include the beginning of diseased conditions, and prescriptions of proper methods of living. The dentist is the man who has taken up the question of mastication of food, and he is showing great interest in it and the necessity for it.

Horace Fletcher told me that he worked for five or six years to get people intersted in this subject after his first book was published, and he could not get anybody interested.

Finally, his son-in-law, who had written a paper on the subject, read it before the British Medical Association, and Sir Michael Foster, who heard the paper, became interested in the subject, and through that got others interested, and lastly got the thing going. Yet all these years Horace Fletcher was talking, lecturing, and being written up in the newspapers, and physicians had not become interested in the effects of mastication upon the physiological activity of the digestive tract. Since Pavlov's wonderful work the question has come to the front. The mouth is the place where disease starts, and the dentist is the one who sees the first manifestations of it. The physician does not see the manifestations of disease in the mouth as the dentist does; and he has very little or no idea of examining the tissues of the mouth. He is not accustomed to looking at the mouth. He does not see with the keen eye of the dentist who is looking at the mouths of patients all day long and notices any slight variation from normal. The dental profession is coming into a line it does not dream of today, and that line is a very important one.

Dr. George W. Cook:

The intersting part of Dr. Hinkins' paper was with reference to the importance of knowing how and when to suspect arsenical poisoning. Arsenic acts, as we know, very peculiarly on the general physiology both of plant and animal life. Dr. Hinkins is well equipped to talk on this subject. About the first time I ever talked with him he spoke about arsenical poisoning, and he has been talking about it more or less ever since, and his observations regarding these plates which he has passed around are very interesting. This is a subject the dental profession should think about particularly when we are up against a hard proposition of this kind. The metallic plates act as catalyzers on the saliva. It is an indication of the peculiar action of arsenic. Its action is very much like phosphor in many cases with many people. The fact that it begins with degeneration of certain epithelial structures is very interesting, as well as the fact that it starts even in these cases from wallpaper. The first indication of its presnce is in the mouth, showing its extreme importance and calling our attention to these obscure and peculiar cases of poisoning, so that as dentists we should exhaust every possible resource with a view of determining the cause.

What effect does arsenic have on the teeth after devitalization? That is a question that has occurred to me a good many times. Since Dr. Hinkins began this work I have been thinking about it. I recall a case that Dr. Macauley had in the office of a man for whom he devitalized the pulp and filled the roots in the usual way, but the patient never got any comfort, and some two or three years after the devitalization of the pulp and filling of the tooth, the tooth was finally lost. He spoke to me about it, and I said to him then, it is possible that some of the arsenic went through the apical end of the tooth and caused this condition. In later years, in talking about this subject, he told me he felt sure that in a number of cases in which he had devitalized the pulps with arsenic the teeth had been lost because of the arsenical poisoning having extended to the apical end of the root, although at the time there was apparently no reason for suspecting the trouble to be arsenical poisoning. But it seems now that might have been the case. Of course, in the vast majority of cases of treatment of the pulps of teeth with arsenic there is no harm following it, but there is that idiosyncrasy in certain people for certain poisonous conditions, that even in the minutest quantity some persons are extremely susceptible to it and may be affected by it.

The so-called obtunding agents that have been introduced in dentistry contain more or less arsenic. A peculiarity apparently exists in certain chemical forms of arsenic. The action of arsenious acid is more rapid, and it has a greater affinity for living tissue than it has in any other form that we know anything about. Take any form of arsenic, it becomes almost insoluble in the tissue, and yet through some particular physiological manifestations of the general system, it is immediately converted into an oxidizable arsenious compound, which is easily assimilated, and I think in the majority of cases in the devitalization of pulps, where we open the apical end, there are possibly there latent particles of arsenic that are alive which may, at some future time, become extremely progressive. We see many cases in which root canals have been as well filled as the average, but after a considerable time they give trouble, and many times the teeth have to be extracted, and I think we can justly attribute a good deal of that trouble to treatment with arsenic. Many times in the treatment of pulpless teeth we cause trouble at the apical end which we never get over. We treat these cases with many irritants, and it is possible that arsenic in a great many cases is responsible for some of these return root fillings and the trouble that ensues after we have completed the work of putting the teeth in what we consider a comfortable position.

This paper certainly covers an immense field for any one to think about when we are considering the pharmacological action of any drug we are using, and arsenic in particular. The general conditions in the body are such that we know so little about them. We are very much inclined to think, as Dr. Baker has pointed out, when we consider all phases of the pharmacological action of drugs, drugs may do as much harm as they do good. Some years ago I remember a remark made by Cushny to the effect that he did not believe in the true scientific knowledge of the physician; that he would be afraid to offer physicians any more drugs, but some of them, he said, had sense enough to know they were dangerous, even worse than a double barrel shotgun, and that physicians are using drugs with more discretion than they had previously done. I think the same can be said of members of the dental profession. When a man, who is so well informed on the action of drugs as Cushny is, makes a remark of that kind to men who are not as wise as he is, we are led to believe that sometimes we go too far in our treatment of pathological conditions with the use of drugs.

Dr. Hinkins' method of desensitizing pyorrhea teeth is important, and clinical experience is oftentimes worth more than some of our scientific knowledge on a subject of this kind. If it were not for our clinical experience, we would have but very little to go on really, but in the great majority of cases that he speaks of, I would hesitate to drill in and put arsenic in there and leave it for any great length of time, because so little arsenic gets in the wallpaper and poisons people. A general change in the physiological relations of it may be such that there may be sufficient absorption of the arsenic to produce deleterious effects.

Dr. C. N. Johnson:

I have been impressed with the comprehensive manner in which Dr. Hinkins has covered this subject, and it is well for us occasionally, when we are using drugs that have such a powerful effect as arsenic has, to stop and consider carefully what we are doing. I am wondering if all of the cases that have come to us with aluminum plates in the mouth, in which the aluminun has deteriorated, as have the plates which have been exhibited this evening, can be attributed to the use of arsenic in some form. This question has never occurred to me before, but I have seen cases where aluminum in the mouth has gone on in the way we see represented here until it is a question in my mind whether aluminum is a good thing to use in the mouth at all. I do not know that we can lay all of that to arsenic. It seems to me, that if we had other plates in the mouths of these patients who are poisoned with arsenic, we would have deterioration of the tissues practically the same as we do with these aluminum plates, but if we had gold it would not affect the material at all, that is, if we had gold in the plates.

As to the amount of arsenic we have in wallpaper, and the amount of arsenic that can be absorbed under the conditions mentioned by Dr. Hinkins, it would seem to me that a patient must be extremely susceptible to arsenic in order to be affected in this way, because there must have been in these same cases other members of the family exposed to the same conditions with no ill results at all.

There is one thing the physician is up against always, and that is the idiosyncrasy of the patient, and it is one of the most important things we have to consider when we are taking up a question of this kind. If we stop to consider that arsenic has been used for seventy-five years in destroying the pulps of teeth, there cannot be very much fundamentally wrong in using it for that purpose, or we would have had more bad results following it. It has been used most extensively for that purpose. True, it has resulted at times in deterioration of the tissues; but that can be explained in ways that have not been mentioned tonight. For instance, I recall very vividly when I was a student a case where a friend of mine, the first instance I ever knew, had great damage done to the tissues of his mouth by arsenic, the dentist having applied arsenic to an upper lateral incisor. He told me afterwards that the tissues were injured very seriously. He did not get it out on the gum at all. The tooth became sore. In a few weeks the dentist took the lateral incisor out, and following that just as nice a core of process came out from that as possible. The case healed up all right. That case made me extremely cautious about the use of arsenic. In this connection, I wish to say that in some of these cases, where we have that serious effect, it is due largely to the fact that there is in that particular tooth another canal leading from the pulp chamber or the pulp canal laterally to the pericemental membrane. We must use the smallest quantity of arsenic, and if arsenic is used for the devitalization or destruction of pulps, it must be used carefully, and the dentist must see to it that it does not get out of the cavity into the surrounding tissues. It does seem to me, however, that it is not such a dangerous drug as we might suppose.

I had this experience in a small town, when I first went into practice, of the effect of arsenic when placed in a cavity. A man who was practicing in the town at the time was in the habit of obtunding sensitive dentin by applying arsenic in cavities. He made a wonderful hit with the people, in that it was said he could fill teeth without hurting. He did this very extensively, and the result was there were many, many cases of alveolar abscesses from dead pulps, and these cases came to me for treatment. This recalls to my mind the experience of a practitioner down East. I cannot recall the name of the author who published the article, but it must be thirty years ago. He wrote on the effect of obtunding sensitive dentin with arsenic. It was a reputable practitioner who published the article on this subject, and he published it in good faith. As soon as the effect of the first article had been produced, he published another article saying that it was a mistake and that he had done incalculable harm, because while the application of arsenic to the teeth had obtunded the dentin, it had resulted in the death of the pulp.

Arsenic is a powerful agent to use in the mouth, and the lesson from this paper and our experience in its use is, we must use it judiciously if we use it at all. If we use it judiciously, it will in the large majority of cases be a satisfactory drug to use. If it causes ill results, then to my mind those results are due to one of two things, either too much arsenic was used, or the arsenic was left in too long, or that it was allowed to get out into the tissues either through leaking from the cavity, or from a supplementary canal which the operator knows nothing about.

I am very glad Dr. Hinkins read the paer, because it leads us into a field which the dentist has not studied carefully, and in which the dentist and the physician can work together to the advantage of the patient.

DR. ELLIOTT R. CARPENTER:

I did not think it was possible at this date for so many things to be written of arsenic, and Dr. Hinkins' paper has been a great pleasure, although personally I am and have been, for a matter of ten years, opposed to the use of arsenic in the devitalization of pulps. Having taken the position that I have against arsenic, the only side of the question I feel capable of commenting on is the one of opposing the use of arsenic. A drug of the known power of arsenic, and considering the dangers that have been commented on by the previous speakers, only convinces me all the more that there is no special reason for using arsenic. I think pressure anesthesia has been demonstrated to have done all that is necessary in the removal of pulps without the danger of arsenic, and if I may be permitted to digress a little from the paper, I would like to say something on that subject.

There have been numerous complaints by operators as to the apical soreness of roots after the use of pressure anesthesia, and I find in a large number of cases that I have been able to trace there has been immediate or nearly immediate root filling after extirpation of the pulp under pressure anesthesia; but if at least two treatments are given after the extirpation of the pulp, and each treatment two or three days apart, there will be no after soreness or apical soreness after the filling of the root. That has been my experience and observation.

Let me give you a personal observation. I do not know whether I am right or whether this simply happened to be so, but I have recently been very much impressed with the toughness of the tooth structure itself, believing that it is greater after pressure anesthesia and extirpation of the pulp than after the use of arsenic.

I cannot speak directly on the paper, because I am absolutely opposed to the use of arsenic, although I appreciate very much the wonderful amount of research Dr. Hinkins has put in on this subject and the very able exposition he has given us.

DR. F. E. ROACH:

I do not feel competent to discuss Dr. Hinkins' paper, and if I undertake to discuss it at all, it will be only to consider that phase that has been touched on with reference to the application of arsenic in the devitalization of teeth. I quite agree with Dr. Carpenter with reference to its use in that regard. The use of arsenic for this purpose has long ago become obsolete in my office. Rarely do I find occasion for its use. I believe that the results from the devitalization of teeth by means of the arsenic treatment are far inferior to those from pressure anesthesia, and I say this for several reasons: The pain incident to its application in many cases, and the time necessary. Our methods of proceeding and the application and treatment of these cases become personal matters. Since pressure anesthesia has been introduced, I have practiced almost exclusively immediate root filling, and I must say it is rare that I have any soreness or any after trouble to speak of.

DR. CARPENTER:

A good many patients have complained of that, and that is why I touched on it.

DR. ROACH:

Occasionally a patient will have a sore tooth, but not near as much discomfort as he would have with the arsenic treatment. Personally, I have no use for arsenic in the treatment of teeth.

While I am on my feet, I would like to relate a case that came under my observation; Dr. Reid also saw the case. It was very interesting. It is along the line of this paper, and after what has been said, I think possibly it may have been arsenic poisoning. I think it is well to relate the case, too, for the reason that it will lead a great many of the men who are taking up some of these base metals, alloys, etc., in filling teeth, to think about it. This was a case of Dr. Barber's, who is associated in the same suite with Dr. Reid and myself. He restored teeth in which he was going to put on a bridge. He had three cases of this kind. He restored the teeth by means of a metal known as bore metal, which is largely composed of aluminum. He built the teeth up and then prepared his crowns for his bridges, he made the bridges and set them. In the meantime, while he was constructing the bridge, the bore restoration metal was cemented in and remained in the mouth for a considerable length of time without any apparent deleterious effect. Almost immediately after placing in the mouth the bridge there was a distinct devitalization or deadening of the soft tissues entirely down to the alveolar process and back of it as large as the end of my finger, almost half an inch in length. A white, cheesy, hard mass dropped out until you could see the bone bare, absolutely denuded of periosteum and all the soft tissues. There were three of these cases that occurred in his practice. It seemed to have been due to one particular kind of cement he was using. Whether it was due to the electrical or chemical effect, or whether it was due to the arsenic in the cement that it was set with, or what the condition was that caused this, was a question in the minds of all of us who saw the case. But it was an unusual case, and I refer to it because I would like to have Dr. Hinkins' opinion as to whether it was arsenical poisoning or not.

Dr. P. J. Kester:

The paper of Dr. Hinkins has been very interesting to me, and yet to a certain extent disappointing. I am not disappointed in Dr. Hinkins, however, because he has gone over the field well, but he has failed to discover the real action of arsenic on the tissues. I think all of you will agree with me that the action of arsenic upon the tissues has been one of considerable mystery. I remember one gentleman—I do not recall his name, but I think it was Dr. Ottofy—who made some queer experiments. He placed arsenic in some teeth and left it in them for a year and a half, without producing any disturbance.

I had hoped that Dr. Hinkins might dig out from his own knowledge or from the books the real scientific action of arsenic on the tissues. He has told us here what occurred; that aresnic destroys certain epithelial cells, but he does not undertake to tell us how it is done.

Dr. Johnson:

I think he covers that point in the paper.

Dr. Kester:

I appreciate the work that Dr. Hinkins has done along this line. I think this is one of the most valuable contributions we have had on arsenic.

Dr. J. C. Reid:

This is really an old subject. The question of the action of arsenic is old, so far as my own knowledge goes. The use of arsenic by dentists has been one of universality. It is a universal drug and is used by every dentist; and the same old story has been brought up tonight in regard to arsenic versus pressure anesthesia, or pressure anesthesia versus arsenic. That is an old hackneyed subject, and it has never been settled, and never will be settled. I am just as much opposed to pressure anesthesia as the others who are advocating it, are opposed to arsenic, and it is like pyorrhea. We know just as much about pyorrhea today as we did fifty years ago, and no more. There are many practitioners of dentistry who will tell you that it does one thing, and there are many fellows on the opposite side who will say that it does another thing, and each one can prove his theory. It is so with this, and I do not attempt to argue the question at all, because I have threshed it out before dental societies on previous occasions. I have just as much success—in fact, I have greater success in using arsenical preparations than I do in using the other. If I use arsenic, I am going to see the patient a short time after it has been used, and I do not remember but two instances in my professional life where I have used arsenic to devitalize the pulps of teeth who did not come back for me to see after I had used it. Two. as I remember, came back eighteen months after I had applied the arsenic. It was all right. The arsenic was there, and the sandarac plug was there, too. I speak truthfully when I say that for thirty-six years I have used arsenic for the devitalization of pulps, and I have not seen a single case where it has extended outside of the tooth or teeth, and so far as I am able to determine, I have never seen any ill results from the application of arsenic in the devitalization of pulps. I saw one particular case that I recall now which was not in my hands, but which would have happened in my hands, as well as it happened in anybody else's. This was a case that I saw some five or six years ago where a dentist devitalized the first bicuspid, which was standing alone. The first and second molars, and second bicuspids were gone, and this was a long bicuspid tooth. The dentist was going to place a bridge in the patient's mouth, and the bicuspid, before the arsenic was applied, was very sound and healthy, and the tissues were perfectly normal. He applied the arsenic to this bicuspid. He drilled into the pulp, and you know you can drill into a normal pulp of a tooth without causing much pain. You can pass a drill directly into it and the patient will never wince, because the pulp has no tactile sense when it is healthy. He applied arsenic. Forty-eight hours after the arsenic was applied the gentleman returned, and the arsenic was removed. The dentist made an appointment for him to return for the removal of the pulp, but at the time he was to come he was taken sick. He was in the hospital for about six weeks, as I now recall. He recovered, left the hospital, and came back to the dentist to have his work finished, and when he came the tooth was very sore and loose. The dentist looked at it, and to his great surprise it was almost so loose that it could have been extracted with his fingers. The gums were blue. There was pus exudate all around the margins of the bicuspid, and he was somewhat alarmed about it, and he happened to call my attention to it and wanted me to see the case. I did. He told me the history of the case. It was a useless tooth then; he could not do anything else but extract it, which he did, and, like the case mentioned by Dr. Johnson, the alveolar process came out with it. A little ring of alveolar process was attached to the tooth. Now, the arsenic never went beyond the puncture of that pulp, but that bicuspid had two distinct roots, and right in the very bifurcation of these two roots was the dental foramen. I suspect that this was one of those cases in which there was an idiosyncrasy; that there was a very great susceptibility to the influence of the arsenic; that the arsenic was carried through the circulation, and that necrotic tissue was formed through that. It could not have been otherwise because the opening was not larger than that which can be made by a number seventeen or eighteen gauge drill. The arsenic was simply introduced into that little channel, but here undoubtedly was a necrosis, pure and simple, and without any question it was necrosis poisoning. It could not have been anything else, but Dr. Johnson's case recalled to my mind the lateral foramina, where the foramina of a tooth will be anywhere on its diameter; they may come at any point. It is not common. If these cases were common, we would have lots of trouble. If our patients have trouble with arsenic, it is largely because of carelessness in its use in the majority of cases. I have known dentists in many instances to recommend not only the first, but second and third application of arsenic, and often it would pass out into the pulp canal of a tooth and destroy the remaining portion of the pulp because it happened to be sensitive. I know that has been done. I have heard dentists say they have done that sort of thing.

I read a paper before this society a number of years ago with reference to the treatment of pulpless teeth, and I took up that question, and I earnestly and vigorously protested at the time against introducing arsenical paste beyond the pulp chamber of a tooth, never in the root of a tooth, because it is a dangerous thing always. After you have introduced arsenic into a tooth beyond that point you may remove it, and you may not, but it is an easy thing to pass a broach and push the arsenic ahead of it into the pulp canal in removing it. That is an element of danger that must be borne in mind.

In relation to this paper, it is a very valuable one. It is a good thing to have these cases reported and this subject revived once in a while and brought to our attention in order to make us more careful, if for no other purpose; but as long as I practice dentistry I shall continue to use arsenic for the devitalization of pulps of teeth.

In going over the bibliography of the paper, the author speaks of 179 references to articles on arsenic. It is a wonderful bibliography. It is valuable to refer to.

With reference to the specimens of plates that have been passed around, I can recall within my own practice and experience having had my attention brought to this particular condition appearing in the mouths of people who wore aluminum plates. I can recall the same thing happening with rubber plates, identically the same thing, only one is metal and the other a vegetable compound. As I recall, this same thing happened in two or three different plates and in the same way, but they were made of rubber instead of aluminum. I distinctly remember when it was advocated a great many years ago that some people could not wear aluminum plates because of the peculiar alkaline condition of the mouth. We know there are some people who are susceptible to the presence of alkaline conditions and it will disintegrate under alkaline conditions. This may have been a coincidence; that this or that particular plate was worn and that these people were still under the influence of arsenical atmosphere. Now, the question would arise, if the arsenical atmosphere or the conditions or surroundings of the individual had been continued and some other plate substituted, would the conditions manifestly appear in the plate? It does not convince me that the arsenic had anything to do with this. It occurred to me that it was a coincidence. Although he presents three cases, they are all different individuals who were under the arsenical influence. We have had these conditions discussed in dental societies many times within the history of my professional life and we run across these plates where they have been pitted. I have seen plates in which there were holes. I have never seen such extensive wearing away of the aluminum as is represented in these cases, but it has been of a pitting nature. Holes have appeared in these plates, and the pits would be discolored. We have always attributed it to the continual submission of alkaline fluids that affected the aluminum plates. I have heard it stated many times that it would affect any swaged plates, and not any cast plates. Here is a cast plate where this condition has taken place.

Dr. George W. Cook:

In regard to the case spoken of by Dr. Roach as having occurred in the practice of Dr. Barber, I will say that I believe it was a case of arsenical poisoning. Arsenic is found in combination with many metals and it is not easily separated from the metals with the ordinary chemical tests for arsenic; but when the application of the cement was made it simply liberated the arsenic.

Dr. Hinkins (closing):

I wish to thank the gentlemen very much for their discussions which they have given on my paper.

In reading the paper, I did not say anything about the action of arsenic because I do not know anything about it. Clinical observation has led me to believe that arsenic is a very diffusible agent. In all of these mouths the saliva was acid, and when I got the secretion from the parotid glands and took the saliva from the mouth, I found it was acid in all of them. I did not tartrate to get acids because I could not get the instrument into Steno's duct to extract the fluids, but in each one of these cases I could not find any arsenic on the plates, yet there were symptoms of arsenical poisoning. I found arsenic in the urine, and these patients had the characteristic symptoms of arsenical poisoning, and I decided to see whether the saliva was alkaline or acid, in the form of a dilute volatile solution.

I have never seen the action that Dr. Kester and Dr. Reid spoke of in rubber plates. I do not say that arsenic caused this, but I do say that I found the characteristic symptoms in patients who were poisoned with arsenic, and whether or not the aluminum acted as a catalytic agent to bring about these bad results is the question.

As to the action of arsenic, in my paper I gave a review of the work of others with a view to finding out the best means of determining whether or not there was any specific action caused by arsenic.

So far as I am able to judge from the contributions of others, I should say physiological action of arsenic is that of a cardiac depressant and an arterial depressant; that it causes fatty degeneration, acting upon the nerve centers and ganglia, etc., ultimately resulting in a parlysis. The smallest quantity of arsenic I have been able to apply with any accuracy was the one-hundredth part of a grain, introduced into pyorrheal teeth that were loose to see if I could reduce the sensitiveness, and afterwards I have removed the teeth, mashed them, and tested them for arsenic, and in some cases I have obtained by the Marsh Gas test for arsenic traces of arsenic; but where I only applied the one-hundredth of a grain of arsenic to a tooth, even to the dentine, applying it on a pellet of cotton, the quantity used was so small in the majority of cases that I was unable to get any arsenic left on the cotton, showing that the arsenic had been taken up by the dentine of the tooth. How arsenic acts, I do not know.

If I remember rightly, a series of articles appeared in the transactions of the Chemical Society of Berlin, in 1898 in which it was shown that phosphoric arsenic in the form of anhydride was one of the most diffusible agents we have in the pharmacopea. It will go through any living substance in the human anatomy, but exactly how it acts, I do not know, and they did not prove it. I do not think anybody knows. It is true, arsenic is a dangerous drug and we should be very cautious in using it.

As to pressure anastesia, I sometimes use it, in the front teeth, after I get back of the bicuspids, I use arsenic with which to devitalize the pulps, because I cannot get into the small canals and remove the pulp. Formerly I used sandarac varnish, but since I have been using cement, I do not recall any case of arsenical poisoning. As to Dr. Roach's cases I should say it was the result of the catylitic action of the base metals and the gold bridge on the cement.

PROCEEDINGS OF SOCIETIES.

AMERICAN DENTAL SOCIETY OF EUROPE, THIRTY-NINTH ANNUAL MEETING, HELD AT BRUSSELS, APRIL 5TH TO 8TH, 1912.

DISCUSSION OF THE PAPER BY DR. JENKINS ON "SOME IMPROVEMENTS IN THE MAKING OF PORCELAIN INLAYS.

MR. W. BRUNTON

asked Dr. Jenkins what means of retention was provided in the matrix when preparing in the manner described.

DR. HIRSCHFELD

asked whether the glass instrument could be made with a flat burnisher instead of a round point.

DR. JENKINS

in reply said that for retaining the filling he preferred to groove it, as by that means the surface attachment was considerably increased. The grooves could be made with undercuts and always a number of them could be cut, thus making the retention as firm as could be desired. With regard to the glass points, he had gone to considerable trouble to obtain flat points but found it nearly impracticable. After experimenting for some time and thinking the matter over he discarded any further efforts in that direction, finding they were unnecessary.

MR. BRUNTON

asked whether the grooves were made after the fusing of the porcelain.

DR. JENKINS

said they were, and cut with a small diamond disk; and replying to the question of another member said it was quite possible to use an agate burnisher instead of a glass burnisher, but it was not possible by any device to make agate so smooth as glass. He had worked with agate points for years but had never yet found one which would not sometimes tear the foil, whereas there was no such thing as tearing the foil with the legitimate use of the glass burnisher. It was possible to go over the gold again and again until every inequality had been disposed of and the gold instead of tearing became more dense and stiffer with each use. It was only necessary to try the method in a single case to be convinced of its extreme value. It was quite possible the glass points he had shown would not suit everybody, but it was perfectly simple to make such points, after a little experience, exactly as one wished to have them.

Dr. Gale

asked how Dr. Jenkins overcame the brittleness of the glass.

Dr. Jenkins

said that all glass was fragile but it was astonishing how much pressure a glass instrument would stand. Even the finest points were not so weak that they could not be used with great advantage. Accidents occurred almost invariably from dropping the instrument and not from its use.

Mr. Brunton

presumed they were made from ordinary glass rod.

Dr. Jenkins

said that there was a great choice in that matter. It was difficult to get glass rods which were practically free from bubbles and defects; it was an exceedingly annoying thing to take a rod with almost invisible bubbles and to find a bubble at the very point where the burnisher had been rounded. In the instruments which were being passed round he knew that the person who manufactured them had discarded twenty or thirty different specimens of glass rods before the right kind was found.

Mr. Brunton

said there were about eighty different kinds of glass made at Jena and he should like to know which sort was generally used.

Dr. Jenkins

said the rods were perhaps from Jena, but of this he was not certain, as the final selection of the glass best suited to the purpose had been left to the expert who made the points after the patterns which had been given him.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY

EDITOR C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

"A SUGGESTION IN DENTAL EDUCATION."

In the May number of the *Dental Review* is an article on this subject by DR. J. P. HARPER of St. Louis, in which he advocates the plan of accepting and graduating dental students twice a year instead of once a year as at present in force. Dr Harper makes some very strong arguments for his plan and says some things that are very true, and yet it remains to be seen whether or not his ideas can be carried out in dental education. There can be no question that many of our present rules are arbitrary and out of date, and that thereby we are obliged to work a hardship on some very worthy students. We have been harping too much on "Standards," as if any man or body of men could formulate a really equitable standard for all the conditions existing in this country or even could agree on any standard after it was formulated. In any evolutionary movement, such as dental education must yet be considered, there is inevitable change. Even in so old an institution as our public school system there is manifest a present necessity for radical change of methods, as is so vividly outlined in the recent book by William Hawley Smith on "All the children of all the People." Our pedagogical methods must ever be subjected to revision as we grow more and more to understand pedagogical needs, which really means as we better understand human nature.

Dr. Harper cites the tendency among medical colleges to accept and graduate students more than once a year—sometimes as often as three or four times a year—but this does not necessarily mean that the same plan would work as well in dental colleges. We must not ignore the fact that dental teaching involves technical training in laboratory courses, and that these courses to get the best results must be so arranged that the work can be carried on in regular sequence from the foundation of the subject to its highest development, which takes with most of the courses several months for each. At no time during these courses could a student enter and take up the work successfully except at the very beginning, and this is a fact which no one must attempt to gain say. Dr. Harper practically acknowledges this when he says in speaking of his plan that: "There can be no doubt that the duplication of work which it involves complicates administrative problems and increases expenses for equipment and maintenance."

And here is the point. Can any dental College existing on its own resources, without endowment, stand the additional expense of the added equipment and nearly double the number of teachers which are now employed in order to inaugurate the new plan. It practically means this because of the fact that the dental teachers of today are for the most part already working up to their limit and giving as much of their time as they can to the work.

We sincerely wish there was a feasible plan by which the present arbitrary method could be improved. We do not believe it is right that a rigid rule should prevail whereby a student may be admitted to a dental college at only one particular time in the twelve months if there is any practical plan by which it may be avoided. But dental college teaching, as we have already intimated, is different from most other professional instruction and we do not at present see how the new plan can be made to work. And yet the fact that we do not see how the thing can be done is no argument that it is impossible. It is the supposedly impossible of today that becomes the established fact of tomorrow, and we shall watch the outcome of Dr. Harper's experiment in this direction with a great deal of interest.

BOOK REVIEWS.

Baby's Teeth to the Twelfth Year. By Albert Westlake, D. D. S. 35 pages. Published by Mitchell Kennerley, New York and London, 1912.

This is a very earnest little volume, the keynote of which is the maintenance of function in the mother and the child.

It would be well if this book were placed in the hands of every prospective mother to the end that she had some comprehension of the value of caring for herself in order to produce the best offspring. But in one place the author drops into an ancient fallacy as follows: "The aching teeth of the mother will begin to soften, because of the withdrawal of the mineral salts for the benefit of her little one; for even thus early begins the mother's physical sacrifice for her offspring."

It seems hard to get this idea out of the minds of the profession, but the fact is that the mother's teeth are never deprived of their mineral salts for the purpose of building up the teeth of the child. This should be excluded from our conjectures and a different point of view taken to account for the failure of the mother's teeth at this time. It is due to a change of environment rather than to a change of structure, and the sooner this is recognized the better it will be for our patients.

But this little book has so many useful suggestions that it will well repay the reading, and we welcome it to our library.

PRACTICAL HINTS.

Edited by J. E. Schaeffer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, The Dental Review, 55 State Street, Chicago, Ill.)

To Easily Remove Excess Cement:—Wind cotton about a broach or other canal instrument, saturate with vaseline or other oily substance and smear over the outside surfaces of crowns and inlays, carrying it up to the very edges. The excess cement, after hardening somewhat, will dislodge easily and in large masses.—*J. P. Luthringer, D. D. S., Peoria, Ill.*

Cast Bolt Lock:—To prevent dislodgement from a disto-lingual cavity in one of the anterior teeth of an inlay, which forms part of a bridge, a cast bolt may be used. It should have a double dovetail shape to fit a cavity in the lingual of both, abutment inlay and remaining tooth surfaces, the place being about half way between incisal and gingival.—*M. J. Homan, D. D. S., Arnheim, Holland.*

Another Use for Alexanders Wax Gold:—When you have to repair a piece of gold work that has sustained a loss by cutting, or wear, just burnish a piece of Alexanders wax gold into the deficiency and flow with solder.

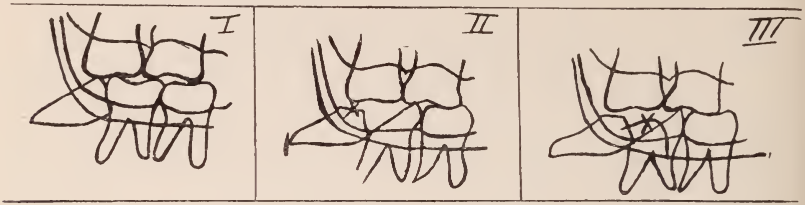
If it is a two piece crown or a piece of work on which there are facings, invest it, if a seamless crown hold it in the flame.—*C. E. Allen, D. D. S., Chicago.*

Incorporating Metal in Wax Model:—In casting work where a portion of metal is to be incorporated in the wax model there is always difficulty in making the metal stick to the inlay wax. This may be readily overcome by coating the metal on the side or sides that are to come in contact with the inlay wax, with one of the good "sticky waxes." This makes the metal readily incorporate with the inlay wax and causes no trouble whatever in the subsequent operation of casting.—*Arthur G. Smith, D. M. D., Peoria, Ill.*

Caring for an Impacted 3rd Molar:—A simple and effective method of caring for an impacted lower 3rd molar.

If you discover the case before it troubles the patient, that is the ideal time to handle it, but you can do so even after it is inflamed.

Anaesthize with pressure syringe or devitalize pulp of 2nd molar and cut it down as shown in fig. II, being sure to get Disto-gingival line as low as Mesio-occlusal angle of 3rd molar, and treat and fill roots as you ordinarily do. If 3rd molar touches the tooth above it, grind it down some (× fig. II), so as to give it a chance to grow up. If 3rd molar is so deep-seated that it won't grow up onto the incline of the 2nd molar, a small piece of clock spring may be used as indicated at × fig. III. Spring is fastened in mesial part of 2nd molar with cement after other end is placed in a slot in 3rd molar and tension given it. See patient once a month or so and if necessary grind 3rd molar some more. After extracting 3rd molar, crown 2nd molar, and you have finished an easy and almost painless operation. Extreme impacted 3rd molars will look very simple to you.—*O. E. Meyer, Watertown, Wis.*



Cavity Preparation:—Practically the same principles of cavity preparation apply to inlay work as to foil fillings. The outline form should be the same as for foil gold only keeping in mind the necessity of sufficient extension for the removal of the wax pattern and access to all parts of the cavity. The cavity must be prepared with the same reference to the resistance of stress. Fillings on the mesio-occlusal surfaces of upper bicuspids and molars receive more stress than those on the disto-occlusal surfaces; as the lower teeth come into occlusion with the upper teeth the force is applied in a mesial direction having a tendency to unseat the filling on the mesial surface and drive the filling on the distal surface closer to the cavity wall. The direction of force in the lower arch is opposite to the upper with a tendency to dislodge disto-occlusal fillings and retain mesio-occlusal fillings. There is another force to be considered, namely, the wedging force of the lower buccal cusps as they strike between the buccal and lingual cusps of the upper teeth. This force is not so fatal to the filling as to the weakened and unsupported cusps and will cause a failure of the filling unless given due consideration and guarded against.—*E. D. Coolidge, D. D. S., Chicago.*

Casting Against Pick-Ups:—I wish to tell you one more principle about gold, and casting it to other pieces of gold which are in the flask.

Without any experience except that gained by blow-pipe work, the first thought which seems to come to dentists when they wish to cast against gold is to bring both the golds to as near the same temperature as possible. This process, gentlemen, is absolutely defeating the object sought. Why?

In bringing the flask and its contents up to a bright red heat you bring the enclosed metal to a temperature at which it oxidizes, and, having no means of deoxidizing this surface, you do not get as perfect a union when the melted gold is thrown in as you will if you heat the case up to a temperature just sufficient to burn out the wax. And this temperature does not absolutely burn all the carbon off the enclosed gold, and as carbon is one of the very best deoxidizers, you now have your gold in the very best condition to be welded to other gold. Now, the thing to do, in order to cast to this gold, is to bring your melted metal up to an excessive temperature, and you will cast in a scientific manner. —*W. H. Taggart, D. D. S., Chicago, Ill.*

Enamel Paints:—The essential qualities of coloring materials are first, durability; second, true firing; third, colors that stand soldering; fourth, natural appearance; fifth, ease of application. Let us first speak of durability. In order that a paint should be permanent upon a tooth it must, to a certain extent, enter into that tooth so that it will be a part of it, and not simply a covering for the surface. To accomplish this the heat must be high enough so that the color will fuse into the tooth and in order to remove that color the surface of the tooth must also be removed. Tests made show that paints fused at a temperature of twelve to fourteen hundred are not durable in the mouth and will not stand the action of vinegar, lemon juice and salt, while a higher fusing will endure these tests, so the melting point of gold may be regarded as the test for proper fuse on high fusing porcelain. However, let us bear in mind that any case may be spoiled unless notice be taken of the fusing point of the *tooth*, as that is just as important as the fusing point of the paint. Paints fused at two thousand lose their porcelain appearance, which is so much like the natural tooth and take on the appearance of colored glass, which is very noticeable and very objectionable.—*E. A. Royce, D. D. S., Chicago.*

Means of Diagnosing a Chronic Alveolar Abscess:— A very important aid in diagnosis is the X-ray. However, in the opinion of the writer, a very accurate diagnosis of most cases can and should be made without a radiograph. The radiograph is most useful in showing certain things that may not be learned with the sharp probe, such as the extent of large areas which can not be fully explored, the positions of unerupted teeth, and of portions of roots, the shapes and some idea of the length of roots, the outline and contents of root canals, etc. It should be remembered that the length of roots in radiographs is usually not correct, as the film is not held parallel to the long axis of the roots, nor is the X-ray tube always at right angles to the long axis of the roots, both of which will cause distortions. The X-ray is also important in cases of blind abscess, and in other cases which can not be easily reached with a probe.

The condition of the root canal can usually be determined very satisfactorily with the X-ray, as mentioned above. Without the radiograph, it becomes necessary to open into the root canal and remove, if possible, the root filling. This is usually a very trying ordeal and it is very often unsatisfactory. The writer questions whether the dental engine should ever be used in opening a canal or in removing its contents. Certainly many teeth are lost as a result of the misuse of the engine in root canals.—*A. D. Black, M. D., D. D. S., Chicago, Ill.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of $2.00 an inch.]

WISCONSIN STATE DENTAL SOCIETY.

The forty-second annual meeting of the Wisconsin State Dental Society will be held at Oshkosh, Wis., July 9, 10, 11.

O. G. Krause,
Secretary.

DEATH OF DR. C. F. W. BODECKER.

Word has been received of the death on April 29, 1912, of Dr. C. F. W. Bödecker, of Berlin, Germany, in his sixty-sixth year. We have not learned the particulars, but we cannot go to press without extending to his family our sincere sympathy. Dr. Bödecker was one of the leading men of the profession and he will be greatly missed.

FEDERATION DENTAIRE INTERNATIONALE.

The section of Bibliography and Documentation of the "Fédération Dentaire Internationale (F. D. I.) is located at 3 bis, Rue de la Régence, Brussels, Belgium (Palais des Beaux-Arts), and all the invoices of books, newspapers, pamphlets, catalogues, engravings, photographs relative to the dental art should be sent to the above address.

THE HARTFORD DENTAL INFIRMARY.

The report of the dental service rendered at the Hartford (Conn.) Dental Infirmary during the year ending March 8, 1912, is at hand. It shows that 904 patients have been treated and 1,469 operations performed. Two hours per day are given to the work. The Hartford Dental Society has pledged itself to raise an annual salary for an operator of $400.00. This work is making an impression on the citizens of Hartford, and the press of the city is acknowledging the great benefit to the community.

ILLINOIS STATE DENTAL SOCIETY.

The Illinois State Dental Society held its forty-eighth annual meeting at Springfield on May 14-17, 1912. The following officers were elected for the ensuing year: President, J. F. F. Waltz, Decatur; Vice-President, J. K. Conroy, Belleville; Secretary, H. L. Whipple, Quincy; Treasurer, T. P. Donelan, Springfield; Librarian, I. B. Johnson, Onarga.

The 1913 meeting will be held at Peoria on May 13, 14, 15, 16, 1913.

H. L. WHIPPLE,
Secretary, Quincy.

A SUPERNUMERARY THIRD MOLAR.

A man about the age of 36 applied for treatment, having a supernumerary lower left third molar of normal size. The lower second bicuspid had been extracted about sixteen years ago; the lower first molar had drifted forward so as to partially close the space of the missing bicuspid. The occlusal surface of all his lower teeth were badly worn, excepting that of the supernumerary molar; this, however, on its mesio-occlusal surface was also slightly worn.

E. R. STEALY, D. D. S.,
Shenandoah, Ia.

AN AFTERMATH.

Yesterday, May 31, I received through the mail a shower, or I might better say a deluge, of letters and post cards from members of the State Society. These had been sent to me at San Diego, Cal., while I was a sojourner there, but did not reach me before I started on my return home.

They all contain beautiful expressions of sympathy, friendship and good wishes in behalf of myself and son, Ross, in our depressed condition of health, and we most sincerely thank each one and all for your greeting and remembrance. I grieved much over missing the meeting, the first one in thirty-two years.

Sweethearts all—I answer you in this way collectively, since the task of answering each one separately would overtax my strength at present.

Cordially and sincerely,
T. W. PRITCHETT,
White Hall, Ill.

DR. AUVILLE LE ROY WHITNEY.

Dr. Auville Le Roy Whitney, one of the prominent dentists of the city, died at his home, 325 East Eighteenth avenue, Friday, March 15, 1912. Dr. Whitney was born in Brownfield, Me., March 28, 1865. He attended Tufts College Dental School in Boston, from which he graduated in 1890. He followed the practice of dentistry for a short time in Boston, then moved to Denver, where he has since practiced. In 1896 he took an active part in the organization of the Colorado College of Dental Surgery, in which institution he has been an earnest worker. He held the chair of Dental Pathology and was Secretary of the Board of Directors. In addition to his college work, he was a very successful practitioner, conducting an office at 616 Commonwealth building. Dr. Whitney was a member of the Colorado State Dental Association, the Denver Dental Association, Junior Order of American Mechanics No. 16, the Denver Athletic Club, the Democratic Club and several glee clubs. He was married to Octavia J. Dundas on November 15, 1904. He is survived by his mother, Sarah M. Whitney, wife and little stepdaughter.

RECENT PATENTS OF INTEREST TO DENTISTS.

1,012,613. Saliva ejector, Wm. P. DeWitt, Somerville, Mass.
1,013,089. Tooth brush, Edgar G. Hubbel, Boston, Mass.
1,013,028. Dental investment cup, Thacker E. Lee, Washington, D. C.
1,013,111. Artificial denture, Ernest C. Bennett, New York, N. Y.
1,013,666. Making dental inlays, John P. Lederle, Chicago, Ill.
1,014,028. Dental tooth regulating and retaining appliance, Edward H. Angle, New London, Conn.
1,014,029. Dental tooth-regulating appliance, Edward H. Angle, New London, Conn.
1,014,030. Dental tooth-regulating appliance, Edward H. Angle, New London, Conn.
1,014,056. Dental tool, Charles L. Gibbs, Philadelphia, Pa.
1,013,993. Dental tooth-regulating appliance, Frank A. Gough, Brooklyn, N. Y.
1,014,594. Dental cleaning device, George B. Hakins, Norwood, N. Y.
1,013,940. Dental press, Fernando O. Jaques, Jr., Cranston, R. I.
1,014,348. Artificial tooth, George W. Todd, Omaha, Nebr.
1,014,428. Tooth-facing attaching device, Sylvester S. Whetstone, Toledo, O.
13,361. Reissue, dental tool, for removing crown pins, George T. Carpenter, deceased, F. C. Carpenter, executrix, Chicago, Ill.
1,014,702. Dental chair-arm, George W. Grant, Bucyrus, O.
1,014,761. Molder's flask and band, Joseph F. Lamb, New Britain, Conn.
1,015,039. Dental tool, Vincent Lasbury, Chicago, Ill.
1,015,276. Hypodermic and similar syringe, John A. Rowse, Newquay, England.
1,014,784. Fountain tooth brush, James E. Tate, Middleton, Ga.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, solicitor of patents, Fendall Bldg., Washington, D. C.

DR. WILLIAM E. HOAG,

Born at Centre Sandwich, N. H., in 1841; died in New York City, April 14th, 1912, in his seventy-first year.

Dr. Hoag came to New York in 1860 and took up the study of dentistry with his uncle Dr. Charles Miller. He married Miss Kempton and to this union one son was born, Joseph Kempton Hoag.

Dr. Hoag graduated in dentistry in 1872 from the N. Y. College of Dentistry. Later he became interested in medicine and took the course at the college of Physicians and Surgeons where he received his medical degree in 1875.

Dr. Hoag's second wife was Miss Knowlton, and by this second marriage he had two daughters and a son, all of whom survive him.

He was a member of the N. Y. Odontological Society. The First District Dental Society, State of New York, and the N. Y. Institute of Stomatology. He enjoyed his affiliations with all these societies and was regular in his attendance at the meetings.

A close friend of Dr. Hoag's, a fellow practitioner of dentistry, says of him as follows: "Dr. W. E. Hoag was a man of strict integrity: honest and truthful, unselfish, genial and a true friend. He was a gentleman in every way, honest in his dealings and to be depended upon under all circumstances.

He was a successful practioner and a very pleasant relationship evidently existed between him and his patients. He lived the allotted age of man, and had he conserved his health and strength, would have lived longer. In his life, as in his speech, he was pure and chaste."

Whereas, through the death of Dr. William E. Hoag this society loses one of its valued members, be it resolved:

That a copy of this minute be spread upon the records of the Odontological Society, and a copy also be sent to the family of the deceased.

William Jarvis.
Harry W. Gillett.
William D. Tracy.

DR. SAFFORD GOODWIN PERRY.

Born at Wilton, N. Y., in 1844, died in New York City, Dec. 22, 1911.

As a charter member of the N. Y. Odontological Society, and as its president for three years, the name of Dr. Perry is closely woven into the history of this society.

Always a believer in the usefulness of the dental society as an institution, he had given unselfishly of his time and energy to promote the interests of this organization from its inception to the time that its activities were discontinued in 1911.

The prominent position occupied by the Odontological Society and the international reputation it enjoyed as an organization, that stood for all that was best in the science of art and dentistry was due largely to the loyal and untiring efforts of the member we now mourn.

Several of his splendid essays were prepared for this society, presented at its meetings, and now form a part of its archives. When the subject of discontinuing active work in the Odontological Society was under discussion, Dr. Perry expressed much regret that a society which had been so useful, and through which so much good had been done for the profession, should be disbanded.

He urged that the members be not hasty in reaching a decision and expressed the hope that the organization would maintain its integrity even though its active work was over.

Dr. Perry's gentle and kindly manner and his keen sense of justice made him a respected executive, as well as a popular member in the ranks.

His sympathy with the young men in dentistry and his uniform courtesy and generosity in all relations with them, has endeared him to hundreds who will always remember him with gratitude.

As a lecturer on the faculty of the Dental Department at the University of Pennsylvania he was always warmly welcomed by the students. His keen sense of humor and a ready wit made his lectures interesting and entertaining, as well as instructive, and his youthful spirit drew his hearers to him and made them feel that he was one of them.

Dr. Perry's essays on dental topics stand out preeminently as examples of scientific and literary attainment, and his other writings, including prose and verse, give evidence of unusual gift and much cultivation.

In recording the death of our beloved fellow member, it is resolved by this society that dentistry as a profession loses one of its most useful and respected men.

That the dental profession in New York loses its best beloved member; and that the Odontological Society now mourns one of its most loyal and devoted followers.

It is further resolved, that this minute shall be spread upon the record book of the society, and that a copy shall be sent to the family of the late Dr. Perry.

William Jarvie.
Henry W. Gillett.
William D. Tracy.

FISHING,

although, as Editor Charles Young of Cornwall says:

There's days when fish won't bite;
It's either too calm or too rough;
It's either too warm or not warm enough;
It's either too cloudy, or the sun's too bright;
The wind's the wrong way, or the moon's not right.
It's either too wet or else it's too dry;
Or for some other reason, you can't tell why;
But there's days when the fish won't bite.

There's days when the fish won't bite;
You may try every lure, you may try every bait;
You may do what you will, and wait and wait,
From morning till noon, and from noon till night,
But you won't get a nibble, though you try all your might;
You may grumble or swear,
But the fish don't care,
For there's days when the fish won't bite.

But there's days when the fish will bite;
When it ain't too calm, and it ain't too rough,
When it ain't too warm, but just warm enough,
And the big old fellows, oh! joy, how they fight!
Your rod's bent double and you keep your line tight.
How they leap! How they run!
Gee whiz! but it's fun,
On the days when the fish will bite!

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SHALL WE BE ABLE TO IMMUNIZE AGAINST TOOTH DECAY?*

BY WILLIAM DUNN, D. D. S, FLORENCE.

I must premise with an apology for taking up your time with a purely theoretical subject which, furthermore, in consequence of my limitations, I shall be able to present only in a very imperfect manner:

But inasmuch as the very essence of these professional gatherings is the exchange of ideas which, however crude, may fall like seedlings on propitious soil, to develop later into something higher and greater, I trust I may be pardoned for presuming upon your patience and attention.

We are so used to taking things for granted that we scarcely ever stop to consider some of the greatest marvels around us: one of these being the self-limitation of infectious diseases.

Here is a patient suffering from bacterial infection. Yesterday he was in a serious state, to-day he is worse. Bacteria are proliferating in his body at a prodigious rate, in almost mathematical progression. A drop of his blood reveals untold hosts of specific micro-organisms, which are evidently having it all their own way. The whole of his body is a breeding-ground for bacteria. Where must it all end? In death? No; at a certain moment, for no apparent reason, the patient will begin to assert himself, will limit the growth of these invading hordes; will overcome them, banish them from his body; and will then have his blood in such condition as to effectually baffle subsequent onslaughts of these particular germs. In other words, he will be "immunized" against this particular disease.

How does this happen?

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*Read before the American Dental Society of Europe, April, 1912.

Investigators have only partly been able to explain this mystery; but that which has been explained is of such supreme importance to all those practicing the healing arts, that it behooves us to familiarize ourselves with these theories and find out whether they may be applied to the special conditions and the special organs which constitute our own particular province, the teeth.

We may define immunity as that condition of an organ or of the body in which disease cannot manifest itself. Sir Almroth Wright has it that immunization is the exploiting in the interest of infected tissues, the unexercised immunizing capacities of the uninfected parts. We know that most of the immunizing substances, most of the processes conferring immunity, if not all, are elaborated within the blood. We therefore must no longer look upon the blood simply as a fluid for nourishing and draining the tissues. We must accept the more recent biological conception that blood is a special tissue in itself, possessing the property of penetrating other tissues and endowed with protective functions of the highest order.

Jenner, Pasteur, Lister are the names of some apostles of Science who have paved the way for later investigators. The "momentum" towards a closer study of the phenomena we are dealing with was given by Metchnikoff, when he startled an expectant world by the announcement that through his microscope he had seen the white blood-corpuscles actually devouring disease-bacteria in their vicinity.

These peculiar white corpuscles, whose function was a mystery, are then not merely leucocytes, clear cells; they are actually phagocytes, cell-eaters. This discovery threw a wonderful light upon and was a great revelation of the protective powers of the body.

It seemed as if the millennium had been reached and nothing more remained to be explained. It all appeared so extremely clear. No sooner would disease-germs enter the body than they would be met by the gallant phagocytes, who would promptly eat them up and make them vanish. All energies, all enthusiasms, were then directed to a study of these phagocytes and their function, phagocytosis.

But, greatly owing to the studies of Prof. Buchner, Science was brought face to face with another aspect of the immunizing problem. There are some diseases (diphtheria is one, tetanus is another) in which phagocytes can play no defensive part, for the simple reason that they cannot get at the infecting germs. Diphtheria bacilli do not enter the blood, to any appreciable extent; they form colonies on some mucous membrane, usually in the throat, where phagocytes cannot touch them, but whence they emit into the blood most dangerous poisons, toxins. Yet not all those who are attacked by diphtheria die; many recovered before Behring even thought of his serum.

There must be something, therefore, besides white blood-corpuscles, which protects the infected patient. This something has been discovered in blood-serum, and as it antagonizes the toxins or poisons emitted by bacilli, it has been called anti-toxin.

Still greater light was thrown on this property of the blood by the experiments of Prof. George H. F. Nuttall, who proved that clear blood-serum, even if entirely deprived of leucocytes, will antagonize bacteria and kill them; in other words, it is a bactericide.

As a child takes up a new toy, Science took up these studies most eagerly, and left our friends the phagocytes, for a time, completely in the backgrgound. On these lines, Professor Pfeiffer discovered that blood-serum is not only a bactericide and an antitoxic, but that it will dissolve the bead bodies of bacteria which it has killed. To substances producing this dissolution he gave the name of "bacteriolysins."

They are especially useful in diseases like cholera, in which the comma-bacilli enter the blood and carry the poison along in their bodies; whereas we have seen that antitoxins are especially required to antagonize the poisons emitted by bacteria which do not enter the blood, as in diphtheria, tetanus, etc. It is a remarkable fact that anti-toxins will neutralize the poisons without affecting the bacilli themselves; so that diphtheria bacilli will live and thrive in anti-diphtheric serum. Another curious property of the blood was discovered by Vidal: Blood taken from a patient suffering from typhoid fever, if added to a culture of typhoid bacilli in a test-tube, will cause these to cluster and clump together; in other words, to agglutininate; whereas blood from a healthy person has no such effect. It is evident that agglutination cannot take place within the blood-stream of the patient, where it would be fatal; so what the precise function may be of these agglutinations is not yet known; but that they exist or are elaborated to fight typhoid infection cannot be doubted. Ehrlich, in his latest studies on anti-bodies, has offered us a schematic explanation of these processes.

May we not suppose some analagous condition in the mouth with regard to the formation of gelatinous patches? Had we but the time, how interesting it would be to investigate the original work of our good Italian colleague, Prof. Arnone, on the coagulation of mucine in saliva, under the influence of precipitants. (Stomatologia: Vol. VIII., No. 9.)

Besides these anti-bodies which act directly upon infecting bacteria or their toxins, we have had revealed mainly by the studies of Sir Almroth Wright, the presence of a "something" in the blood which makes phagocytes active and hungry, so that they will easily devour bacteria which would otherwise remain unchallenged. To this "something" he has given the name of "opsonin"; and upon its variations he has founded his opsonic theory, which it is useless to go into at present; more than to say that by counting the bacteria ingested by a given number of phagocytes (that is to say) by obtaining the "opsonic index" of a patient's blood) it is possible to follow the course of an infectious disease by repeated observations, and to watch progress of a patient, controlling the injections of immunizing serum, in a positive manner which cannot be equaled by clinical observations:

Let us now recapitulate and understand how Nature antagonizes infection (leaving aside chemiotaxis):

Firstly: By phagocytes, which may be stimulated by opsonins.

Secondly: By bactericides in blood-serum.

Thirdly: By bacteriolysins; all of which act directly upon the invading bacteria.

Fourthly: By Antitoxins, acting upon the noxious secretions of bacteria.

Fiftly: By Agglutinins.

It is scarcely necessary to recall that man has taken advantage of lower animals for cultivating anti-bodies. The horse furnishes diphtheria antitoxin. Rabbits furnish antirabic serum, etc., etc.

A consideration of immunizing doses yields some extraordinary figures. Sir Almroth Wright calculates that an individual is rendered immune to typhoid fever by three inoculations. The first containing 500,000,000 of typhoid bacilli, and each succeeding one 1,000,000,000 bacilli. Let us not forget that we are dealing with incredibly small beings and these units, comparable in number to the entire population of the globe, can be carried in four or five drops of serum. The question now arises: How can these theories be applied to our own province? Shall we ever be able to immunize against tooth decay?

We might, by analogy, conceive the preparation of some vaccine or some serum which would antagonize tooth decay bacteria themselves (anticarious serum) acting directly against decay-producing bacteria.

Or we might suppose the preparation of a decay antitoxin, which would act upon the noxious secretions from decay-bacteria: We might even stretch a point and conceive that which Bacteriology has not yet been able to furnish against other diseases, a composite serum, proceeding from the cultures of several or all species of decay-bacteria; a serum or vaccine which would act, as we have said, either as a bactericide,, killing them as a bacteriolysin, dissolving them; or as antitoxin; neutralizing their effects.

Laying aside the technical difficulties (which might perhaps not be insurmountable, as blood-serum is an ideal culture medium and some animal might be found whose blood would permit of repeated and increasing inoculations of decay-bacteria yielding cultures which, duly attenuated, would be tolerated by human beings) such a serum might even practically be produced; but the great stumbling-block would be in getting this vaccin, this chemico-biological agent, to the zone we wish to immunize; that is to say through the blood-stream into the dentin and the enamel: Would this be possible?

Our great master, Sir Almroth Wright, lays particular stress upon the fact that bone-infections yield slowly to vaccine therapy; and points out that troubles like streptococcal infections of bone, sinusitis, middle-ear disease, etc., can only be got under after repeated consecutive inoculations of antistreptococcic or antistaphylococcic serum; sometimes by the two combined. Again the same author, in discussing the limitations of vaccine therapy, makes it a fundamental principle that successful results can be obtained only where an efficient lymph-stream can be conducted through the part. Such a precept coming from a man who has devoted his life to the study of such grave infections as typhoid, and has done so much towards anti-typhoid immunity, must have the greatest weight with us. In the dentin, far from having an efficient lymph-stream, nutrition and metabolic processes go on entirely by osmotic action. Beyond the pulp and perhaps the odontoblastic layer, there is no circulation of blood; and we may take it for granted that where normal pabulum is absorbed so slowly, a vaccin or an antitoxin would stand a very remote chance of penetrating in sufficient quantity to be of any practical utility; that is to say for antagonising decay-bacteria within the infected dentin or of neutralizing their by-products.

Let me refer those who may be interested in these studies to the researches of two of our good Italian Colleagues, Dr. Fasoli on secondary dentinal calicifications (*Stomatologia,* Vol IX., No. 6) and the more recent studies of Prof. Beretta's on the basement-membrane (Stomatologia, Vol. X, No. 6). Compare also with Bödecker's last year's lecture on Histology of the Dentin (DENTAL REVIEW March, 1912).

If this be the case with the dentin, how much more does it apply to the enamel? This society owes much to its able microscopist, Dr. Bödecker, for his very clear exposition of his studies on enamel. His sections, photographed by ultra-violet rays, have proved to us that enamel harbors a far greater percentage of living matter than we had hitherto given it credit for. We remember his revealing to us those lamellae which are undoubtedly nutritive channels between enamel-prisms, stretching from the dentinal tubuli terminations on one side to Nasmyth's membrane on the other; but though we can readily understand how this lamellar system is sufficient for the nutritive requirements of the enamel, we cannot conceive how a somewhat heterogenous material such as a vaccine could be possibly conveyed to and through the enamel. Of any possible absorption of vaccine by Nasmyth's membrane we need not speak, though it would be here that an anti-body would be most useful and efficacious, in the very first stages of decay.

One other channel might be open to an anti-carious vaccin; through the salivary secretions to the cavity of decay; but this hypothesis is not admissible for two reasons: firstly, because decay-germs, when once established on the enamel and dentin, penetrate these tissues and are no longer in contact with the saliva. Secondly, because the protective and chemical properties of saliva would probably so attenuate or neutralize any virtue remaining in the serum as to render it absolutely inert. So I fear we must conclude that, so far as artificial immunity (for such we must consider vaccin therapy to be), is concerned, we cannot hope, at the present stage of science, to immunize man against tooth-decay. Such immunity may some day be achieved when vaccins can be so prepared as to easily penetrate bone and dental tissues, at the same time presenting greater stability against disturbing or neutralizing agents.

But let us not forget that there is such a thing as auto-immunization against tooth-decay. We all of us recall cases in which decay, sometimes advanced to the second or third stage has suddenly stopped, the particular tooth in which this has occurred proving refractory to further decay. This has usually happened by the fracture of some cavity-wall or by a rapid wearing down of the tooth, in such a way that, getting plenty of food friction, bacteria could not lodge on that surface. So that the surface which was once a cavity-floor has become dense, hard and shiny.

We know by sections how nature has proceeded. The once-infected dentinal canaliculi have been obliterated by secondary dentinification; the pulp has retreated behind a "zona lucida" so well described by Tomes; in fact, the tooth has protected itself most efficiently, supplying lost tissue according to its requirements; insuring perfect function and displaying immunity against further decay.

It is a wise lesson which we are daily learning, that there is no better way of protecting one's teeth than by entrusting them to their proper function.

And when that delightfully irresponsible person, our inquisitive patient will airily ask us "Why don't you invent something which will prevent teeth decaying?" We shall in all conscience be able to say: "Dear Sir or Madam, the panacea is already discovered; give your teeth and your children's teeth plenty of hard work with simple, tough food, that will not easily ferment, and you will do more for them than dentists and scientists with immunizing preparations can ever do."

THE PROPAGATION OF THE PRINCIPLE OF MOUTH HYGIENE.*

BY GEO. A. ROUSSEL, D. D. S. (PARIS)

There has never been a period in the evolution of the healing art like the present one, when all efforts tend to the same aim, and all great minds are united in the desire to preserve and lengthen human life.

The principles of hygiene seem based on the assumption that, if once human beings can be induced to employ the means indicated, not only will many diseases lose their virulence, but a number of lesser ailments, which physicians are now called upon to cure, may completely disappear.

In our field of labor we have every opportunity of preserving human life by protecting it from the inroads of the deadly army of malevolent bacteria, ever ready to do their worst. Oral hygiene or oral prophylaxis embraces everything pertaining to the prevention of disease in the oral cavity; it is an important part of general hygiene, treating of the care and proper use of the mouth and teeth in behalf of the physical welfare of human vitality.

The health of the body depends upon the quality of the nourishment it receives, the air it breathes and the food it assimilates, all liable to be affected by the unhealthy conditions of the oral cavity. We may then advance that the neglect of the teeth and of the mouth is the reason for many forms of physical disability.

They are subject to certain diseases which not only tend to destroy the teeth and make the mouth unclean, but, also to affect the general health.

Nature has given us a set of teeth which is a wonderful model of an anatomical apparatus not only from an esthetical but also from a mechanical point of view; unfortunately they do not escape the general rule of destruction and it is our duty to save them from the principal factors which contribute to the uncleanliness of the mouth: Decay, pyorrhea alveolaris, chronic abscesses, irregular teeth, defective eruption of third molars, diseases of the gums, and of the pericementum, caused by tartar, etc.

To have a good set of teeth and keep them all through life, one must not only enjoy perfect health, but have inherited a good constitution. If this is not the case, as often happens, we have a great part to play in the amelioration of the atavism of the individual and of the race.

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*Read before the American Dental Society of Europe, April, 1912.

At the present time it is fully realized that to secure good health one must take proper care of all the organs which contribute to the preservation of life. The teeth must be regarded as very important and active factors in maintaining the body in good form, which is more generally conceded now than in former days.

If it is necessary for the specialist to thoroughly understand the functions of the organs, in order to cure them, when in an abnormal condition, it is also essential for the patient to possess that rudimentary knowledge, which will enable him to give to these organs in a normal condition, the case and attention they require, thus reducing to a minimum the complications arising from a lack of intelligent prophylaxis.

Oral hygiene is then a great factor in preventive medicine, it will enable our patients to avoid local troubles and thus ensure their physical welfare. There is not the slightest hesitation about the necessity of taking into consideration a subject that will contribute towards a prevention of diseases of the teeth and the mouth, diseases which will causes an injurious influence upon the function of other organs.

Oral prophylaxis now stands on a firm basis; its object is to place the mouth in as clean and healthy a condition as possible, so as to prevent the destruction of the teeth and the septic infection of the oral cavity, which, being the gateway of the alimentary canal, prevents also the possibility of stomach and intestinal infections and even of nervous disorders.

The ill-kept mouth is a breeder of disease germs, through it pass the micro-organisms that produce the diseases from which the human family suffers. It is in the neglected mouth that grow the organisms giving rise to dental caries with all its complications. As a remedy we must prevent the accumulation of debris, and the production of conditions that make the mouth a hotbed for the noxious germs of general and contagious diseases like consumption.

The fact that unclean and diseased mouths are a menace to the health of human beings, and therefore a social danger has received great attention in America, Germany and in England, through the active efforts of Dr. Cunningham, where an active propaganda for the education of the public has already been crowned with success.

The purpose of this paper is to call attention to the fact that in order to safeguard the health of others and to do efficient missionary work, two factors are deemed advisable to bring about a betterment of oral hygiene; 1st, the education of our patients in our daily practice; 2d, altruistic generosity from the dental surgeon, who is anxious to bring about this much needed reform.

When our patients are well instructed, they spread the knowledge to their family, relatives, and servants; they may thus be of great help in stimulating the inertia of the public; we come regularly into contact with them and may repeat our propaganda with a moral compensation for the time spent.

Furthermore, the care and attention given to the mouth by the laity and poorer classes is too often with the principal thought of esthetics, whereas hygiene and utility are secondary considerations. The real cause of this neglect and indifference is simply ignorance, for which there is no excuse. The well-to-do classes with which we have to deal in our European countries do not generally know what is meant by mouth hygiene, nor do they know that neglect of the same, means not only an unclean and a diseased mouth, but also the eventual impairment of general health. They ignore likewise that a clean mouth is an index to character.

Without overrating the importance of the part we have to play, we must bear in mind that it is our constant duty to reiterate the fundamental principles of hygiene to our patients, and endeavor to our utmost to extend their knowledge in this branch of learning. Those who come in constant contact with us and place their confidence in us, are naturally well-versed in these principles, but how often are we not discouraged, on examining fresh patients, to observe the neglected state of their mouths and their utter ignorance of the most elementary rules of hygiene. In such cases we must act with all frankness and point out the danger of lowering the power of resisting disease by keeping an unhealthy mouth.

THE TEETH AND MOUTH AS INCUBATORS AND CARRIERS OF CONTAGIOUS DISEASES.

The mouth is the entrance of the respiratory and digestive track, through which must pass the air we breathe, and all food upon which the nourishment of the body depends.

When in a neglected state, all sorts of disorders occur, the prevalent one being decay, which is regarded now more and more as related to contagious diseases. It is the most disastrous factor in its influence upon the hygiene of the mouth. It is a disease brought about by the action of germs, which possess the property of converting starchy food, sugar, etc., into acids. They dissolve the inorganic portion of the tooth and finally cause the loss of the tooth itself. These disastrous effects progress more rapidly when the tooth opposes but little resistance and when the mouth is unclean.

These cavities in the teeth are real incubators for all pathogenic bacteria, as it is a recognized fact that in these cavities and in the peri-apical inflammations, germs of diphtheria, pneumonia, tuberculosis, influenza, and other infections have been found. This is what explains the important part played by cavities in the teeth as a door open to the germs, entering the body through the respiratory tract. As the greater number of children's diseases, such as scarlet fever, measles, whooping cough and mumps are believed to be respiratory infections, we are justified in saying that decayed teeth may be equally efficient bearers of other contagious diseases.

The human mouth which may be regarded as an ideal breeder of germ life on account of its temperature, moisture and favorable nutritive conditions, is then a great field for the rapid formation of bacteria.

For this very reason the dentist will neither allow the mouth to remain in a neglected state, nor leave any receptacles for germs, such as cavities, broken-down roots, deposits about the teeth, where proliferation of germs do more and more damage. The cavities must be filled, the roots extracted or crowned, and all deposits around the teeth and under the gums carefully removed.

On examining patients in the clinics how often do we find in the same individual a number of putrescent pulps discharging pus, and abscesses of the roots, this pus going down into the alimentary canal and being absorbed by the blood. There is no doubt that in such a mouth, with teeth that are mere hotels, where are harbored guests of the germ family, troubles of the throat, lungs, stomach, disturbances in the digestive organs, troubles of the jejunum, duodenum and ileum will be a consequence and that the real offender will be the oral cavity. There cannot be any doubt that if proper care is taken of this portion of the alimentary canal, if air and food pass through it without being charged with deleterious bacteria, the conditions will be changed. Many cases of Bright's disease, troubles of the digestive canal and diabetis have been greatly benefited and improved by putting the gums in a healthy condition.

Diseases of the gums are caused by the formation of calcic deposits, which begin on the neck of the tooth at the junction of the enamel and cementum. These deposits are not at first seen by the unaided eye, but before they can be observed they have generally accumulated in masses. The gums are swollen, sore and bleed easily, causing the formation of pockets around the teeth where millions of germs may be found which cause an inflammation of the pericementum, also pyorrhea and as a consequence of it the loosening and loss of the teeth.

The prevention of diseases of the gums and of pyorrhea is more certain than is that of decay. The causes of this latter are numerous among them being the wedging of food between the teeth, tartar, lack of exercise of the teeth, improperly contoured fillings, general uncleanliness of the mouth, in fact, any irritation of the gum margins.

The proper treatment must be given by the dentist, but it is the patient's duty to brush them gently and gradually harder, at the same time increasing the stiffness of the tooth brush. These conditions would have been avoided if rational brushing had always been applied.

Cleanliness and vigorous exercise of the teeth and gums is of the greatest importance for procuring, healthy conditions always easier to obtain with people taking open air exercise.

Uncleanliness of the tongue:—Another carrier of dangerous germs is the tongue which is often the cause of foul breath. Its posterier dorsal surface is often coated with deposits which must be removed by the aid of a tongue scraper, which may be formed by holding together two ends of a flexible metallic blade, thus forming a loop which can be used to scrape the dorsal surface of the tongue.

The cleaning of the tongue must be done chiefly in the morning, but also at night, by placing the scraper as far back as possible on the surface of the tongue and scraping towards the tip.

These are the different causes of the diseases of the mouth and teeth, which may endanger the general health by the constant presence of micro-organisms, and the constant flow of pus into the mouth from pyorrhea pockets or abscessed teeth, often the cause of infection of the tonsils, of the antrum and also of the inflamed condition of the alimentary tract.

Furthermore, the secretions of the mouth constitute the main cause of respiratory infections, whose germs are transferred from one person to another directly and indirectly. by the various objects in use. Indeed, when a person with a mouth full of germs talks, coughs or sneezes, bacteria are thrown out, harming other people. Such people may be considered as dangerous when we know that tubercule bacilli are found in decayed teeth, under the alveolar process as well as in the oesophagus or trachea.

Campaigns have been made against the evil effects of alcohol and tobacco; representatives of the sanitary department are sent in cases of epidemics to examine stocks of hogs and cattle when they run the risk of being destroyed, and their owners are obliged to take proper prophylactic measures to avoid spreading the disease. Unfortunately things are not the same for human beings; but let us hope that there will be a campaign in favor of oral hygiene to fight against the prevailing ignorance with regard to the evil consequences of this lack, as we may say without hesitation, that more physical deterioration has been produced by unsanitary mouths than by alcohol. This measure of first importance would be an economic as well as a sociologic one.

As the actual treatment of tuberculosis is largely directed towards strengthening the patient and his tissues so that they may resist the attacks of the disease, proper food, well digested and consequently well masticated, is necessary, and should the teeth not be in a state to contribute to the thorough mastication of the food, unnecessary and abnormal work is given to the digestive organs. Bad teeth mean faulty nutrition, digestive disorders and a consequent weakening of the system which is less able to resist the attacks of tuberculosis.

When the public know the comfort of having a pure, clean mouth with well-polished teeth and healthy gums, they will appreciate it and discontinue being poisonous to themselves and to other people. The danger of catching diseases will be thus lessened and their health will be better, chiefly when they suffer from diseases of the body which cause abnormal conditions of the mouth and teeth.

To sum up the most important factors for the prevention of local and general diseases are: cleanliness of the mouth and teeth, a vigorous use of the gums and teeth, regular dental examinations, slow eating, thorough mastication.

CLEANLINESS OF THE MOUTH AND TEETH.

Cleanliness of the mouth and teeth is of the greatest importance with our artificial way of living, it is essential to the health of the teeth and gums; though it will not entirely prevent decay, the nearer we come to perfect cleanliness, the better off we are, both for our health and for the saving of our teeth. Most people who do not keep their mouths clean are ignorant of its importance, or do not know how to do it, sometimes both conditions have to be accounted for. But intelligent patients are clamoring for information and guidance, they seem to understand that a clean and healthy mouth, with good teeth means healthy bodies and brains and that there is nothing of equal value for the human being.

If a man is known by the teeth he keeps (1) we dentists are also known by the care we take of our patients' teeth and mouths. It must be then our principal care to give to our patients the notions of rational prophylactic treatment, which consists in keeping absolutely clean every surface of every tooth, massaging the gums and disinfecting with proper care the oral cavity.

It requires patience and time to instruct the public in the care of the mouth and teeth, but it is a sacrifice for which we shall be well compensated later on. It is sometimes necessary to tell certain patients the same thing over and over again, chiefly in our European countries, where they are not trained and do not easily submit to hygienic discipline, but we must be persistent in impressing upon them the importance of the advice given. Missionary work in prophylaxis is most interesting; each day brings gratifying results and pleasure to us, on realizing the satisfaction patients derive from our lessons by keeping a mouth in a healthy condition. Oral prophylaxis has not only the great advantage of overcoming the fear certain patients have of dental operations, but also of avoiding more than half of the work that could have been done if we had not taken the trouble of lecturing on the advantages of prophylaxis and we are very well rewarded by the satisfaction of having given our fellow creature considerable comfort.

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(1) Mouth Hygiene mass meeting Nov. 10, 1910.

To show the change of conditions brought about by cleansing the mouth we may repeat the experiment of Prof. W. D. Miller, which he mentioned before us in this society fifteen years ago: "We take ten cubic centimeters of saliva in the morning before the mouth is cleaned and mix it with 50 centigrammes of starch, the whole being placed in an apparatus and heated to a suitable temperature. The mouth is then cleaned and with an equal quantity of saliva a similar operation is repeated.

As is expected the saliva taken before cleaning the mouth shows more rapid signs of fermentation than the second with likewise greater quantity of acidity.

This experiment shows the necessity of keeping the mouth free from septic deposits, which may harm tooth substance. It is generally admitted that the most efficient time for cleansing the mouth is before retiring at night. Indeed, if one sleeps with a mouth in which particles of food are allowed to remain between and around the teeth, they decompose shortly after eating, and during sleep the mouth being at rest the teeth and gums are not rubbed by the tongue and cheeks, the flow of saliva being stopped is consequently not renewed, then the germs form and work with more activity. The most efficient time for the toilet of the mouth is then at bed-time. But once a day is not sufficient, more frequent cleansings are necessary, the next in importance being the morning after breakfast, when the mucous coating of the night and the remnants of food may be removed so as not to remain until the next meal time generally long enough to leave particles of food which begin to decompose rapidly. This does not mean that the teeth must be brushed directly after meals as it takes some time before particles of food begin to decompose, but as soon after as possible.

TECHNIC OF PROPER CLEANSING.

The process of cleaning the mouth and teeth may be divided into two parts: the mechanical and the antiseptic cleansing. The mechanical cleaning consists in rubbing every surface of each tooth to remove remnants of food or the sticky layer of foreign substance which generally coats the teeth. Nature helps us in that respect during the process of mastication. Food passing over and around the teeth keeps them polished and massages the gums to keep them in a healthy state, as the circulation of blood is stimulated not only in the gums but in the peridental membrane and pulp.

As nature cannot do it all, it must be done with the help of two adjuvants, the waxed dental floss and the tooth brush. The dental floss or ribbon, is used to clean the proximal surfaces between the teeth in the interproximal space, where food accumulates, having been packed or forced in during the process of mastication, chiefly in case of defective contour fillings where proper knuckling has been overlooked, and when migration of teeth has been caused by extraction. The proximal surfaces are the most important surfaces to keep clean for several reasons: their anatomy presents a flat surface, they cannot receive the friction of the tooth brush or the rubbing of the cheeks, lips and tongue whose movement against the other surfaces, which are round, is sufficient to free them to a certain extent of any accumulation of harmful deposit. We consider then the dental floss as the most effective adjuvant in cleaning teeth; a tooth only scoured with the tooth brush without the help of dental floss will decay more quickly.

It is obvious indeed that the use of the tooth brush alone means no rubbing and cleaning whatever of the proximal or interproximal surfaces as the bristles cannot reach them, there is consequently a rapid decay of these surfaces and a formation of cavities between the teeth.

On the other hand, if the dental floss is used alone the proximal surfaces are thoroughly cleaned, as they are the only ones not self cleansing, the tooth is then less liable to decay, as the other portions of the tooth, the lingual, buccal and occlusal surfaces receive a certain amount of rubbing by the cheeks, lips and food. When the proximal surfaces, receive a thorough rubbing and the others only a natural one, the tooth is less liable to decay, and when a tooth brush is not obtainable a piece of waxed floss thread may be rubbed between the teeth, followed by good rinsing

The waxed dental floss must be thoroughly rubbed against each tooth on the whole proximal surface, no tooth must be skipped, even those which stand by themselves. The silk must be well waxed, and the flat kind is more suitable for cleaning.

To run the thread between the teeth, a short piece, well stretched by the two hands, is forced up above the points of contact, without touching the gum; if it is not stretched enough and too long, it may roughly slip up and hurt the gum. The thread must be rubbed hard against the tooth, just touching the gum without rubbing it.

Every time the thread breaks between the teeth, is cut or catches, it indicates a cavity, a defective filling or tartar. The patient must at once consult his dentist.

TOOTH BRUSH.

To brush the teeth properly and with efficiency, use the proper brush. A tooth brush is useless if it is too large, whereas a small tooth brush may be worked in any part of the mouth; for the front teeth, a medium-sized brush must be used and for the back ones a small one. The bristles of the brush must get between the teeth as much as possible, for this the brush must present plenty of space between two rows of bristles, the rows must have a shape best adapted to the curve of the arch with a long tuft at the end, the others shortening towards the handle. The long end tuft will clean the rearmost teeth and those near empty spaces. The cause of decay of the buccal side of second and third molars is always due to lack of brushing those surfaces. The patient must be instructed not to open his mouth entirely, to relax his cheeks and in using a small brush to place the handle parallel to the median line of the mouth, so as to reach the last tooth.

If the end of the handle is kept toward the median line the bristles come only in contact with the teeth on the middle of the arch and not with the posterior ones.

The brush should have a slender neck between the bristles and the handle, so as to be moved easily without stretching the corners of the mouth. The handle must also curve towards the bristles to facilitate reaching the back teeth. When there is little space to run the brush around the upper back teeth a very small brush must be used to reach the farthest tooth on all sides. An efficient tooth brush is one that can be moved easily in all directions. As the bristles become soft when they are wet, it is best to keep two or three to use them dry and hard.

The process of brushing must start on the gums to remove all deposit of mucous, to massage the gums causing an increase of circulation of blood, and come on to the tooth in the direction of the length of the crown towards the cutting edge or the occlusal surface, up and down, brushing up the lower teeth and down the upper ones, outside and inside. The diseases which cause the loosening of the teeth are due to the improper feeding of the gums by good blood. The gums and teeth must never be brushed crosswise, it rubs the gums away from the teeth and irritates them, furthermore, it causes grooves or mechanical abrasion at the neck of the teeth.

Well thought brushing of the gums and teeth is acquired after a short practice; at first when not used to it the gums will become sore, but will gradually get harder and the more they are rubbed the better they become. When the gums are tender it is better to use a medium hard brush, gently at first and progressively with more energy, and after they get used to it with a hard brush they become perfectly healthy. Thus the trouble 90 per cent of the people have after 50 years of age will be avoided, as the circulation of blood is quicker and the gums and the peridental membrane offer more resistance to morbid conditions Deposits tend to accumulate chiefly in the angle formed at the cervix of the gum and the crown, the germs they contain by spreading into them form a danger of the tooth's decalcifying and of the gums receding, the enamel rods are dissolved and the germs enter the softer material of the tooth, the dentin, which is more easily penetrated, because of its construction. To avoid these ill effects proper brushing is necessary, the movement of the brush must start way down on the gum and be directed in the direction of the crown as indicated above, and more easily with a small brush with only a few tufts.

Deposits tend also to accumulate in the fissures on the occlusal surfaces of the biscuspids and the molars, they may be removed with any kind of tooth brush but more easily with a small brush.

Better brushing can generally be done by using both hands. The left hand can better reach the buccal side on the left hand side of the mouth and the lingual side of those on the right both above and below. If the right hand only is used the arm must be well stretched out and the wrist curved in.

Teeth cleaned mechanically in such a way can be kept from decay all through life, except in fissures of occlusal surfaces, sometimes so deep that nothing can be used to remove deposits, but in between the teeth no decalcification must take place, if constantly and properly cleaned.

In the antiseptic cleaning may be included powders and mouth washes of all sorts.

All sorts of prescriptions for rendering teeth white have been found from early times in all nations both civilized and uncivilized. They were then used only for beauty's sake, as it was not then realized that clean teeth and health were almost inseparable and that it is the main function of a dentifrice. A good dentifrice, powder, paste or mouth wash, is one which contains ingredients to stop fermentation.

POWDERS.

A good tooth powder must be so prepared that it is capable of cleansing and polishing the enamel without danger of scratching its surface. It must be free from grit, pumice or too hard and coarse substances, which may take the gloss off the enamel, render the surface of the tooth dull, more liable to take a grayish tint and get easily stained from any cause. It would then require a strong powder to make it whiter, producing at last mechanical abrasion from the wear of the enamel layer badly injured, and so far as we know, that is one part of the body that is not repaired of itself, and once destroyed is gone forever.

It must be antiseptic, astringent, stimulating and alkaline.

The department of health of the city of New York has issued the following formula sent to the parents of all public schools with other oral prophylaxis directions:

Thoroughly mix: Powdered precipitated chalk, 60 gr.; powdered castile soap, 15 gr.; powdered orris root, 3 gr.

MOUTH WASHES.

An antiseptic mouth wash is a very effective ammunition against proliferation of germs.

Bicarbonate of soda contributes to neutralize the acids produced by the fermentation of food. A teaspoonful for half a tumbler of water is sufficient; it is not an antiseptic but a germ destroyer. Also boracic acid dissolved in water as much as it will absorb, or peroxid of hydrogen 25 per cent solution in water.

Other preparations, more scientifically prepared, combining real utility with an agreeable taste, can be obtained on the market.

In the case of an acid condition of the mouth, the use of solu-n of magnesium hydroxid in water, known as milk of magnesia, must be advised to neutralize the acidity.

The patient should rinse the mouth with it several times a day, and take nothing into the mouth after its evacuation, as it leaves a beneficial coating on the teeth with an alkaline film that protects the tooth for hours.

Another very valuable alkaline mouth wash in spite of its simplicity and always obtainable is lime water.

To prepare it place a cupful of unslacked lime in a jar containing about 5 liters of water; the jar being well closed, is shaken several times; twenty-four hours after a deposit has formed, most of the water contains the dirt and washings of the lime; it must be thrown off and fresh water poured on, when the whole is again shaken. When the lime has formed a deposit, the water must be decanted, fresh water is poured on again until there is no more lime deposit.

To use the lime water thus obtained as an alkaline mouth wash mix it with half water.

CARE OF THE TEETH DURING PREGNANCY.

The old saying that every child is the cause of the loss of one of his mother's teeth is not a true one, for the injurious effects of this temporary state may easily be avoided. Pregnant women used to expect to suffer more or less from toothache and even to lose some of their teeth. Physicians who are generally the first to know of this state ought to be well versed in oral hygiene for these cases. Patients generally come to us when the period of gestation is so far advanced that all the destroying agents have caused their evils on the hard and soft tissues of the mouth.

During pregnancy there are a great many factors causing dental caries and diseases of the soft tissues; as decay of the teeth is an external process resulting wholly from outside causes by lactic acid dissolving the hard crystallized lime salts of the tooth. It is well to know that during this period the mouth is bathed in an acid saliva, when in a healthy state it should be alkaline. The acid condition is caused by the fermentation of deposits of food and other extraneous materials on the teeth and on the soft tissues of the mouth. Certain foods containing starch, sugar, milk, etc., ferment and are rapidly disintegrated by the micro-organisms of the mouth, especially in unclean mouths. During pregnancy other causes are to be added to the excess of acid in the secretion, the vomiting which coats the teeth with a mixture of partially digested food and a solution of hydrochloric acid. In these conditions it is our duty to prevent every cause of damage, for this the mouth must be kept in a perfect hygienic state, and as indicated above, the teeth should be brushed with an alkaline solution. It is more complex in case of regurgitation caused by fermentation in the stomach, but anyhow these precautions are to be observed.

As soon as a woman knows she is pregnant she should inform her dentist so that he may put her mouth in a state of defense against the activities of the tooth-destroying agents, following accurately the principles of prophylaxis.

Should any work be required, the sittings must be short and not correspond with the date of the menstrual period, as at that time the patient is more nervous and every nervous shock or fatigue and pain must be avoided.

If the mouth is examined in time and this physiological state indicated, there can not be any nervous strain as no painful operation is necessary, chiefly in a well-kept mouth where no cavity exists, and if no deposit exists on the teeth to cause irritation of the soft tissues, and the exaggeration of sensitiveness occurring a few weeks before confinement is thus avoided.

Decay of the teeth is more usual in women who lead a sedentary life and lack exercise in the open air. This tendency is greatly increased during pregnancy and it often happens that following child birth many cavities are discovered and fillings become loose. The dentist is very often unjustly accused of having done work inferior in quality, whereas it is simply due to the ignorance of the mother, who ought to have taken the necessary precautions of prophylaxis to avoid such troubles.

If damage has been caused, it is advisable to fill the cavities temporarily and to wait until the end of the physiological process to do permanent work with the resources of modern dental art, as there is no reason why a tooth should ever be lost except from accidental causes and extreme neglect.

SPECIAL CARE OF THE TEETH DURING PREGNANCY.

The prospective mother should know that at the critical periods of her life, and chiefly during pregnancy and lactation, the resistance of her teeth decreases, noticeably owing to demineralization, decalcification or the intensity of her present physiological state causing a modification in the organic substance. We must then come to the conclusion that it is of great importance at these periods not only to guard her against the demineralization of her maternal organism but also to help the formation of the skeleton and teeth of the unborn child.

Indeed, the calcification of the first set of teeth begins at the eighteenth week in the embryo, that is to say, four months and a half before birth, and the crowns are completed at that time with the exception of the second molars, which are half calcified. These crowns of the teeth will later on be subject to the attacks of caries when they finally make their appearance, if they are insufficiently protected by well calcified enamel. It is then wise to care for a child's teeth previous to its birth, as certain influences may be detrimental to the first set of teeth during the period of gestation.

Among them we may mention tuberculosis syphilis, temporary illness and improper diet as principal causes of atrophy of the deciduous teeth.

After birth the bones of the child may be ameliorated by proper nutrition, but the enamel of the deciduous teeth is formed and the ameloblats have disappeared, so there is no remedy possible to their faulty development.

If this condition is greatly due to the improper feeding of the mother it would then be prudent to tell the mothers that during the period of gestation they should be provided with a normal regimen, without exaggeration of a bone-forming diet, rich in lime salts to supply the essential elements, contributing to form tooth substance. Calcium salts, phosphates and carbonates of lime are excellent forming tonics as found in such foods as bread and cereals with less sugar and starches.

To sum up, ordinary wholesome living with plenty of outdoor exercise is the best way of producing good teeth for the child as well as for the mother's sake.

CLEANING THE TEETH.

Under these conditions the mouth must be kept in a hygienic state. The teeth must receive the same attention as mentioned in the instructions above; for cleaning in general, a suitable brush or brushes with cleansing material, a good powder to scour away all deposits is essential. It must be alkaline in reaction, consisting as a base of powdered magnesium carbonate and precipitated chalk.

The following is a good formula: Magnesium carbonate, precipitated chalk, aa, 25 gr.; powdered castile soap, 10 gr.; bicarbonate of soda, 5 gr.; essence of wintergreen, XV gtt.; used at night and the mouth thoroughly rinsed with tepid water afterwards.

In the morning a good paste like "Kolynos" may be used to brush the teeth and gums to remove all deposits which have accumulated during the night. Paste is better than powder, as it lubricates the surface of the tooth, and this prevents food from adhering. In the middle of the day the brush and dental floss are only necessary to remove the particles of food.

Being given the reaction of the saliva, the mouth should be bathed several times a day with an alkaline preparation, chiefly before retiring at night, with milk of magnesia or lime water, according to the instructions.

When the mouth is toothless after birth, the child becomes independent as far as its nutrition is concerned Though there are no teeth present, the mouth of the baby must be thoroughly cleaned with absorbent cotton and boiled water three times a day. The child at this age gets rid with difficulty of any waste products and they may ferment and become a cause of infection.

This period requires special attention, as the teeth are being formed in the jaws, and need proper material to develop them, which is received through the food.

Human milk is conceded to be best adapted for feeding infants, but the mother's or nurse's diet must be so directed that the child receives through his food all the elements which contribute to perfect assimilation. Cow's milk is not always exact in its compositions, sometimes too rich in cow's albumen or impure and not containing the tooth elements required. With it the child is more liable to suffer from stomach disorder or bowel trouble than with human milk, as it is more difficult to digest, and sterilization diminishes the nutritional qualities of its elements. This does not concern any more the deciduous teeth, but the permanent ones, whose process of calcification has already started and will continue to form the enamel until the age of nine.

From six to twenty months is the critical age of teething. It must be watched very closely and instructions given for a preventive treatment so that the teeth may be better. Before six months, the average time of eruption for the lower central incisors, there is more or less irritation of the gum over the growing tooth and an exaggeration of irritability of the child. The flow of saliva is greatly increased, causing more or less stomach trouble. The erupting tooth, pushing its way up through the gum tissue, causes local irritation and pain, sometimes so severe as to produce trouble on the nerve centers and the overproduction of saliva causes an inflammatory condition of the alimentary canal. Too much saliva descending into the stomach during and between meals makes the food ferment and causes colic and and diarrhea, the consequences of which may affect the second set of teeth.

Children suffer less from indigestion and other complications in cutting their teeth when they are in good hygienic conditions, breathing pure air and receiving proper food.

During this period of infancy and later on in childhood, that is to say, from twenty months to the appearance of the permanent set, lack of proper care and attention may cause most of the ills of humanity, a fact that is now generally conceded. The dental profession has been awakened to this and is in certain countries doing its utmost to bring about a change for the benefit of the children and ultimately give them mental and physical strength.

To arrive at this condition the parents must from the period of the eruption of the first tooth until the entire galaxy of gems have made their appearance take proper care of each of them. The majority of parents do not realize the necessity of cleansing the mouth as they do the external body. They do not see that decay of a deciduous tooth finally means its loss, preceded by pain, neuralgia, impediment of mastication and formation of pus, which is carried into the stomach of the little one, who may become so seriously handicapped by a mouth filled with pathogenic microorganisms that his little body is more susceptible to the slightest provocation from disease, thus preventing his physical development and delaying the advance of education. Later on the cavities of the first teeth, being receptacles for decomposed food and germs, are a danger for the teeth of the second set, which will be in contact with them.

As decay makes its appearance early in life, every effort should be made to preserve the temporary teeth from this cause of destruction, chiefly on the molars, which remain in the mouth until the child is twelve years of age. These teeth being temporary are too often considered as of no importance by the parents, who completely ignore their importance, and as a consequence when decayed or missing they lessen the temporary masticatory factors of a child which help his development. It is obvious that a child having difficulty in masticating bolts his food, causing indigestion and bowel trouble.

Indeed, the deciduous teeth should be preserved until the permanent ones are ready to erupt as they are most important for the regularity of the dental arch and the normal occlusion of the permanent set.

For it is a well known fact that the back teeth tend to fill up a vacant space by migrating forward, then the early loss of a deciduous tooth will cause the first permanent molar to erupt in an abnormal place in the jaw and will consequently diminish the space between its anterior surface and the median line of the arch, thus being a future cause of overcrowding of the teeth which must fill up that space. At the age of six, before the first set of teeth begins to change, mother nature provides a molar, the first molar of the permanent set thus giving the child masticating organs while he is changing his temporary teeth. It has been called "the working tool of mastication" by Dr. Woodbury, the Boston neurologist. It is indeed the most important of all the teeth, and is often taken by ignorant parents and nurses for a temporary tooth, as it is cut while the child has his baby teeth. The early loss of this tooth is a cause of troubles which can never be remedied.

When this tooth is missing nature makes an attempt to close the empty space but the migration of the back teeth forward destroys the occlusion and may even cause a complete anteroversion of the second molar into the vacant space left by the first molar as well as an elongation of its antagonist of the opposite jaw. A second consequence is a space created between the teeth into which particles of food are forced during mastication. This becomes a cause of discomfort and decay owing to the difficulty of keeping them clean.

The loss of this tooth causes also ill-shaped jaws and misplaced teeth. On account of the defect in articulation the thorough mastication of food is rendered impossible, it therefore enters the alimentary canal not properly chewed.

Then it should be our duty to tell the mothers that at six years of age the child will cut a very important tooth, generally taken for a deciduous one, but that the child will keep it all his life. We must point it out and add that particular care must be given to that tooth, as it is generally found decayed the year following its eruption from undue value being set on it. As it is the time the child generally begins to attend to his teeth himself, he is careless, takes no pride in keeping his mouth and teeth clean, which are generally neglected.

When that tooth is not properly cleaned on all surfaces it rapidly decays and more quickly on the mesial surface, when a cavity exists on the distal surface of the second deciduous tooth. Every child should have this sentence fixed firmly in his mind: "Clean teeth do not decay." As decay of teeth is not limited to any age, the most important time for the care of teeth is from six to twenty years of age. If the teeth have been properly treated during these years they will remain in perfect condition and will give little or no trouble after this critical period.

Another cause of defective dental organs is the stress brought to bear on the brain, owing to the cramming system of education with a want of outdoor exercise.

The parents do not realize that their children are, as a rule, shut up in crowded school rooms and that a child consumes more oxygen than an adult and throws off a corresponding amount of carbonic acid; such an atmosphere is unhygienic, whereas a growing child needs pure air for his oxidation. Up to the age of fifteen is the period of greatest stress of human life with the natural development, dentition, mental work and all the diseases of childhood.

A child overfatigued has a defective nervous system, he does not masticate his food properly, does not prepare good material for the nourishment of his tissues and all the ailments of childhood rapidly increase, furnishing our department with a long series of troubles as decay and improperly developed jaws.

Parents ought to be well aware of the fact that by safeguarding the physical welfare of their offspring there would be more efficiency in their mental efforts and that it is dangerous to cram the brain when the physical development does not allow of it, for a healthy body alone permits the brain to functionate properly.

If troubles are caused by the faulty oral conditions of children the handicap will be found still greater in adult life when the vages of dental caries have worked even greater havoc than in childhood.

MASTICATION.

It is in the mouth that the first and the most important step in digestion takes place. Over this step we have every control. This emphasizes the importance of a good set of teeth and a clean mouth synonymous of perfect mastication. Thorough mastication of food, right living and due regard to health rules must ever be the basis on which the physical welfare of people depends.

Perfect nutrition means thorough mastication of our food; those whose teeth are not in good condition should consult a dentist to repair the damage caused to these organs and to replace the missing ones, as it is better to have artificial teeth than none.

When food is thoroughly masticated a smaller intake is sufficient, assimilation is easier and vital energy economized. It requires indeed vital force to digest unnecessary food and when not digested it ferments, poisons the body and causes all sorts of organic troubles from excess of imperfectly digested food. This is what makes a person sick or tired by auto-intoxication, as no one should be tired unless one is sleepy.

The longer food is worked in the mouth the shorter time it remains in the stomach and intestines and when properly matsicated about 95 per cent of the nutritive substances are utilized.

The powers of endurance are considerably enhanced by thorough mastication and insalivation. Young folks with proper diet have good teeth, a normal development of the face and good general health.

The experience of Mr. Horace Fletcher has proved that a man weighing 62 kilos is able to perform the hardest work taking daily 400 grammes of food, that is to say, one-third of the ordinary ration, provided mastication be thorough.

The first step of digestion may be dived into two parts, taking place at the same time, mastication and insalivation. Mastication is performed by the teeth which nature has placed in our mouth for this very valuable purpose and if we neglect to use them we are inviting conditions that seriously threaten the other functions of digestion. The principal factors are the bicuspids and the molars when in proper occlusion, and they must be used equally on both sides, otherwise mastication is defective. When mastication is done only on one side, as often noticed, the other side becomes unhealthy, the gums are spongy and congested, the bleed easily, the teeth rapidly decay, for, as said above, mastication is necessary for the welfare of the dental organs and gums, and if this condition is found at the beginning of the digestive tract, how will it be with the other? Then to contribute to efficient mastication a person must have a regular arch, a normal occlusion with well-rounded teeth. When food is thoroughly masticated every particle of it is well mixed with saliva before passing into the stomach. Saliva contains a ferment, ptyaline, which converts starch into sugar. This change must take place in the mouth if we wish to get all the benefit from starchy food.

Thorough mastication causes a great flow of saliva, and the acidity of this saliva is then diminished. When food is bolted and washed down with liquids the saliva is thick and acid, and we have a cause of decay, besides troubles and diseases of the stomach.

We must impress upon our patients that simplicity of diet and living, and the regularity of meals are also important factors of good digestion and that they must bear in mind, as it has already been said, that we eat to live and not live to eat, and that a great deal can be done by ourselves to save the physician the trouble of curing what might have been avoided.

DIET AS A FACTOR OF ORAL HYGIENE

If we eat to live, we live as we eat, as it is the most important function in life next to breathing. A great deal has been said about what to eat and when to eat, but if we learn how to eat all these things will take care of themselves and the first requisite will be good masticating factors. What must we eat, what diet must we prefer more particularly for our oral hygiene?

The elements which biochemistry points out as absolutely necessary to form healthy blood, bone tissue, nerve and brain are sodium, iron, sulphur and calcium; they are generally lacking in the general diet consisting of meat, potatoes and white flour. Fruits and vegetables are especially rich in the above named elements. They are the general regimen of man and must be eaten abundantly in season, coming from a soil rich from mineral fertilizers and not from stable manure. The mineral substances they contain are taken from the soil, and as they are part of the living organism, they are directly assimilable.

The organism of man taking its subsistance from the natural products of his native soil, the mineralization of his organism comes from his alimentation and as to this latter it also depends on the composition of the soil. Then soil rich in earthy phosphates produces vegetables and animals equally rich in those elements, which being used as food will produce a race with strong nervous systems and skeletons well mineralized.

The soil then contributes directly to form the distinctive signs of a race. In some parts of France the lack of phosphates in the soil is one of the causes of decay, and this lack of minerals is noticed in the mouths of foreigners, who suffer from dental disorders when staying in our country, when they have no sign of decay in their own.

The only way to keep up a normal condition of health is to live on natural food. It must be eaten in the most natural way. with all its mineral salts and flavor, containing nitrogenous food. carbohydrates, fats, inorganic salts and water, leaving out all animal products susceptible of producing disease, preserved food of every kind, storaged or canned, being less easy of digestion. Vegetables and fruits must be eaten abundantly during their season. Vegetab'es generally rich in the above elements are: Lettuce, spinach, carrots, endives, tomatoes, cabbage, cucumbers, asparagus onions, etc.

Fruits most recommended: Grapes, apples, pineapples, strawberries, oranges, lemons, cherries, plums and all sorts of berries. They very advantageously take the place of special remedies in the form of pills, powders and tablets.

It is a well known fact that people who live on a plain, wholesome diet have teeth of superior quality and enjoy better health.

Another point is the quantity eaten. Eat as long as you have a keen appetite and relish your food; everybody must be guided not only by his appetite but by age and experience and also how the food agrees with him. Natural food cleanses the teeth and is not a cause of decay. Avoid salt, vinegar and spices, avoid drinking at meals and take your time for eating without bolting food into the stomach.

In climates where people live on plain food, mostly vegetables, they have better teeth than those who live in countries where culinary art is regarded as a sign of advanced civilization, but from a hygienic point of view it is most detrimental

Food containing sugar is not of itself destructive to the teeth, only when it is allowed to remain between the teeth and around their necks until changed by the bacteria into lactic acid. Starchy food is changed into sugar or glucose and is just as bad for the teeth. If they were cleaned as soon as sugar is eaten, leaving no trace of sugar, there would be no harm done.

INFLUENCE OF IRREGULAR TEETH ON MASTICATION.

If the teeth are necessary for good appearance, speech and perfect utterance, considerations our patients look at in case of irregularity, they are much more useful for mastication.

Their primary purpose is for service, to grind our food and prepare it for digestion; there is no proper digestion without a good set of teeth, and one is greatly handicapped by abnormally developed jaws, misplaced or missing teeth not fitted for mastication.

Then regulating teeth is to bring them to normal occlusion so that they may meet with their antagonists of the opposite jaw to help not only the masticating process but also to keep them in a healthy state, as irregularity is conducive to decay. We have indeed insisted upon the advantages round teeth have on those presenting flattened surfaces for immunity from dental caries, and we may add that regularity of position is also a great factor of immunity, as physiological cleanliness is more effective, as it is easier for the tongue, lips and cheeks to remove the destritus of food than in case of irregularity, where it is mechanically impossible.

Irregular teeth are a great mortification for a person who will always be greatly handicapped by a deformed mouth. It is also conducive to defective development of the face and leads to diminished nasal passages and consequent mouth breathing; on the other hand, a well-developed dental arch and palate with teeth in good occlusion are always accompanied by well-developel nasal passages and a normal-sized face; it is the greatest preventive of adenoids and enlarged tonsils.

In most cases of irregularity the dental arches have to be enlarged. The teeth have a given size and when they are irregular it is on account of the contraction of the arch, which must be expanded to give the necessary space for the teeth to be in a regular row, rendering them effective for mastication. According to Dr. E. A. Bogue, the regulating of the dental arches must be started, with the temporary teeth and the prevention of dental deformities requires the retention of the deciduous teeth in their proper positions and normal relation to each other until the permanent teeth are ready to erupt.

Expanding the arches is the key of regulating dental deformities and a sure preventive of contagious diseases which are acquired through mouth breathing.

Contracted dental arches are indeed evidence of lack of vigor and the cause of most of the irregularities accompanied by protrusion of the front teeth. Spreading the arches had better be done with the temporary teeth; it enlarges the nasal passages of the child which are rendered apt to their functions, allows the mouth to close, preventing the direct entrance into the lungs of the air-borne microbes of contagious diseases which have the most disastrous consequences.

Among the causes of malposition of the teeth, one cannot be avoided; that is heredity, but there are other causes avoidable, as deforming the still soft bones of the child by constant pressure, due to bad habits, like thumb sucking, which may produce serious deformities; biting the lower lip, a nervous manifestation persisting even through life. There are also accidental causes, like early extraction of the deciduous and permanent teeth; forcing the posterior teeth to tip into the space thus made by the missing one by anteroversion, making it unfit for mastication, or causing the elongation of the corresponding teeth on the opposite jaw.

CONCLUSION.

From all that has been said this startling statement may be made: With a healthy and well cared for mouth mankind need fear but little from the ravages of disease. But with neglected, ill-kept teeth and gums and through under-developed and irregular dental arches humanity is furnishing the best possible medium through which to develop all ills and ailments.

For these very reasons the two principal branches of modern dentistry will always be prophylaxis and orthodontia; indeed if the teeth of a child are kept clean and in their right place there will be a great percentage of decay avoided.

By insisting so strongly on the care of the teeth our object is to promote general and local health, to contribute to increase the length of man's life and consequently to be a factor of happiness to humanity and to show that there is nothing more pleasing to have than a clean set of teeth.

NEURALGIA AND SENSITIVE DENTIN.*

BY L. L. DAVIS, D.D.S. CHICAGO, ILL.

It is not my intention this evening to enter into a discussion of the many neuralgias of dental origin but to treat of *one* of the exciting causes of irritation of the Trigenims and its branches, due solely to a condition of the teeth that seems to me more prevalent at the present time than in former years. *Especially so* in persons who devote more than ordinary care to the cleansing of their teeth and keeping the oral cavity in a thoroughly hygienic condition.

That a neurasthenic diathesis in certain individuals predisposes them to neuralgic affections cannot be gainsaid, but often we find that mental worry, overwork, and especially the many forms of "La Grippe" may so reduce the vitality of persons not of the neurasthenic type as to bring about such a condition of the nervous system that they are liable to a neuralgia from causes which ordinarily would not have such an effect.

The neuralgia arising from the one cause which I propose to discuss this evening manifests itself by intense pain and tenderness in the soft tissues about the infra orbital and inferior dental foramen, and this pain is increased by pressure upon the parts. Sometimes an extreme sensitiveness of the superficial surface of the skin is noticed and in one particular case that has recently come under my notice, so marked, that the patient—a man—was unable to shave for several days. This tenderness is transitory, being sometimes upon the cheek and later moving to a point on the chin or along the ramus of the jaw or still further passing down on the neck. Increased blood pressure due to a recumbent position may increase the neuralgic pain, so that sleeping is almost out of the question. Thermal changes bring about paroxysms. Eating and drinking may do the same. Fruits, sweets, acids, and hot or cold drinks all tend to the same results.

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*Read before the Odontological Society of Chicago, March 12, 1912.

When such a condition presents, it is a foregone conclusion that a tooth or a number of teeth are concerned in bringing about such a state, yet oftentimes only the most minute inspection will reveal the source of trouble.

Exposed and sensitive dentin at the neck of a tooth or an abraded surface will surely be found, but sometimes hidden under the gingival border, or between the teeth on the approximate surfaces, that only the most extreme care in examination by the operator will disclose it.

CAUSES.

That an acid condition of the secretions around the affected part is one of a number of causes for such a condition has been fully determined by the experiments of Miller and others, and the litmus paper test readily proves the theory.

Dr. Miller has demonstrated the wasting of tooth tissue both by acid salts and abrasion, so when we find in the patient each of these conditions we cannot be at loss to find the cause of the trouble. Probably on account of too vigorous use of the toothbrush, in the wrong way, and it is invariably in those persons who give their teeth more than ordinary care these conditions prevail, we find at the gingival line of the anterior teeth a worn and polished surface or indentation, perhaps on the buccal surfaces of the posterior teeth grooves, may be discovered.

Then, we have that individual who persists in the indiscriminate use of the toothpick with results that require our best efforts to alleviate.

From recent observations I am obliged to call attention to the danger that arises from the so-called prophalaxis treatment at the hands of incompetent persons.

Cleanliness is at all times to be urged, commended and enforced, if possible, but the indiscriminate and persistent use of steel instruments and abrasive powders may and in fact have already been a potent factor in bringing about conditions such as I have described. The Prophylactic or Oral Hygiene movement has much to commend it to the intelligent practitioner and has stimulated the whole profession to a more systematic and thorough cleansing of the teeth of patients. We do not hear so much about "throwing in cleaning with the job" as formerly.

The profession as a whole see the necessity for putting the mouth of the patients in a clean condition if the operations performed therein are to be of any value; therefore the reputation of a practitioner is at stake unless he devotes the time necessary to the thorough cleansing of the teeth, and see to it that proper remuneration be made for same.

This is, to my mind, one of the best results of the Oral Hygiene movement. At the same time I cannot fail to see the danger that is present in too frequent application of its principles to all persons. Good judgment, the one essential in all successful work, must be exercised in this direction.

That certain conditions are prevalent in a few cases requiring a systematic cleansing and polishing of the teeth at more frequent intervals than ordinarily practiced is acknowledged, but having had under my care several cases of neuralgia just recently, that from their history and general indications can point to but one factor, viz., an improper interpretation of Oral Hygiene principles, I feel it my duty to sound this note of warning.

TREATMENT.

The therapeutics of sensitive dentin is varied only by the condition constituting the prime cause, the amount of pain, the deepness of the grooves or depressions at the point of irritation, and the patient's ability to endure pain.

One of the *first* essentials is instruction in the proper method of using the toothbrush and the insistence upon a reasonable amount of time to be devoted to its application. The use of a solution of equal parts of chloroform and chloride of zinc crystals at the points of irritation is good. Nitrate of silver applied in crystal direct to the spot even better, but best of all for longer periods of relief is the application of heat in the form of a red hot instrument passed lightly across the sentitive spot, the part having been previously covered with a small quantity of the oil of cava-cava.

There is no doubt that this method causes intense pain for an instant and requires courage on the part of the patient when again necessary.

Excavation and introduction of some protective filling material whenever possible is one of the best remedies.

The porcelain inlay for the anterior teeth offers great inducements for its practice. Its composition and cosmetic qualities are such as to make it an ideal remedy under such conditions.

For the posterior teeth gutta percha is one of the best materials that can be used; its non-irritating qualities allows the gum to resume normal position, when the gum has been carefully forced back to assist the introduction and proper finishing of the filling, and its lasting qualities are surprising. It can be placed way up under the gingiva in those places on approximating surfaces and the festoon will assume its normal position, but especially must the patient be cautioned against the use of toothpicks, in these cases—as in fact in *all* cases—for the dentist should embrace the opportunity whenever offered to give such advice and instruction as will result in the best good to the patient.

When relief cannot be assured by any of these methods Devitalization of the pulp will prove the panacea. Pressure anaesthesia has simplified this so that not only is there a speedy return to health on the part of the patient, but its practice on the anterior teeth does not bring about such a change in color as to warrant any hesitancy in its application, and the results from its use demand its adoption more often than it is practiced

THE DUTY OF THE STATE IN REFERENCE TO EDUCATING THE YOUNG.*

BY DR. F. F. FLETCHER.

It is today a generally accepted fact that in order to secure the best mental development the pupils must be as nearly free from physical defects as possible. The reverse must also be true. As the troubles increase and become chronic the pupil's mentality and perception are weakened; he is unable to keep pace with those who are normal, drops behind, becomes discouraged and ofttimes degenerates into a criminal. 'By applying modern science during the early stages most of these defects and maladies can be cured before the mental vigor has become impaired to any great extent. The pupil resumes his place in class, becomes vigorous mentally and physically, with the result that the state has a useful citizen instead of one with an uneducated mind in a defective or diseased body. These facts being known someone is surely responsible when conditions referred to are not corrected. "A sound mind in a sound body" is being more and more accepted as the basic rock on which to develop a perfect man. The pendulum is now swinging in this direction, first by advocating and securing open air playgrounds encouraging athletic sports, camping, living out of doors and now sleeping, if not outdoors, at least in rooms having open windows, thus securing fresh air as much as possible. These methods simply assist nature and in the early stages of many disorders are quite sufficient; but many have some physical defect which these simple means alone will not correct as in cases arising from the eye, ear, nose, throat or teeth. Often a very little attention will correct the defect if taken in time, but if allowed to progress the child is at least handicapped more or less for life. In the face of these facts the state is not performing its full duty to the young by paying salaries to teachers whose chief work consists in assigning lessons and listening to recitations. This method once held sway, but is fast becoming obsolete. We, as specialists, may be overenthusiastic on our line of work, insisting on needed reforms, while other things seemingly more imperative to the powers that be are given precedent. Some may not know the amount, extent, or variety of work now going on in the schools of our own city. With your permission I will refer to some of the methods now in use. Pupils having physical defects usually show signs in some way of being abnormal. The teachers are instructed to note all such cases, find out the cause if possible and report. If she can not diagnose, the medical inspector, who calls at stated intervals, takes up the case with all others reported, corrects disorders if possible, and returns pupils to their places. When the inspector is unable to satisfactorily diagnose, the patient is transferred to a school for defectives located in South St. Louis. This school is in charge of special teachers, selected on account of having necessary qualifications and training for the work. But 15 pupils are assigned to each. Here the teacher and the medical inspector working together get as full as history of the case as possible, visit the home, secure family history, note environment and in fact gain all information available. The teacher is all the time trying to stimulate the pupil, not by routine work but by leading each one into some new line of thought and study in hope of finding out something which will assist in solving the problem.

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*Read before the St. Louis Dental Society, Feb. 19, 1912.

Another most necessary and creditable work is being done in discovering and segregating those children afflicted with incipient tuberculosis.

This is an open air institution located on Natural Bridge Road and has accommodations for only 30 pupils. The St. Louis Society for the prevention of tuberculosis is in charge, furnishing everything from building to books, including a trained nurse, cook and male attendant, except one teacher, who is appointed and paid for by the school board. None but incipient cases are permitted to attend. This school is to be open continuously, giving no chance for disease to recur or advance. Regular school hours are observed Children come at the usual hour in the morning, don their Eskimo suits for outdoor living and assume school routine. When the teacher decides they need exercise on account of cold, they dance one of several appropriate steps taught them, and then resume work.

Three nutritious meals are given them during the day, furnished by the society. After the noon hour half of the number retire to cots in the open air for a nap, and when this is over, the others take their sleep. The success is remarkable, children gaining from 10 to 20 pounds each, since last fall. A visitor unacquainted with conditions would pronounce them abnormally healthy. They have a long waiting list of those desiring to enter, and the society proposes to open a similar school on the South side.

Through the kindergarten the mothers have been interested and instructed to the extent of forming mothers' clubs. These work chiefly with the kindergarten teachers, planning entertainments, picnics, etc., and will doubtless do much good.

The Patrons' Association is another organization founded by the fathers of school children and works similarly to the Mothers' Club. Both demonstrate that the parents are becoming interested and working with the teachers. We are making progress along correct lines possibly a little too slowly to suit us, but public interest is being awakened and when alive to the benefits to be obtained will demand and secure the reforms we are now striving for.

BANDED VERSUS BANDLESS ROOTS.

BY A. W. MCCANDLESS, D. D. S., CHICAGO, ILL.

I wish to utter a word of caution against promiscuous crowning of roots without banding them. The fact that a root may last for twenty years or more with a Logan Crown put on in the old-fashioned way, proves only that there are exceptions to most rules.

Since the casting process has come in it is so easy to adapt wax to the end of a root that I fear too many roots are being crowned without bands. Of course, those who have had experience know full well that when I say easy I am speaking relatively, for it is no easy task to adapt the wax perfectly to the end of a root, and this is an additional argument for the band.

My observation both with my own patients and those of others who have fallen into my hands has led me to conclude that too many roots are being crowned without bands, as a number have come to me with split roots, and although the number of such accidents is comparatively small these misfortunes have been of sufficient importance to convince me that in the vast majority of cases the roots should be banded.

I have worked out a method (which may not be original with myself, but in so far as I am aware it is) by which I can prepare and band a root for a Davis or a Goslee Crown and adapt the porcelain to the root in less time than is required for a proper bandless operation.

I will describe this plan briefly:

The sides of the root should be carefully paralleled to insure an accurate fit of the band and should be beveled well up under the gum on the labial or buccal aspect so that the gold band may be out of sight.

The porcelain crown is ground and fitted approximately to the end of the root.

A round wire of clasp metal gold of proper size (usually 16 gauge for the single rooted teeth) is threaded and cut the proper length, so that while in place in the crown and root will allow the two to come almost together. This provides for the required thickness of wax between the two surfaces. Smear the surface of the crown, including the receptacle which is in the crown for the post, with a preparation of castor oil and glycerine, equal parts, to prevent the wax from adhering to the crown so tightly as to make its removal without distortion impossible.

Fill the hole in porcelain crown with melted sticky wax, which is much better for this purpose than inlay wax because tougher and more tenacious and may be pressed out thinner without breaking. Warm the wire post sufficiently to admit of its going to place through the wax into the hole of the porcelain tooth. Adapt to root while wax is still soft to get proper alignment of crown with root. Remove, blow off the saliva, add more sticky wax, try in again and again until about the proper amount of wax is obtained. Lay aside and fit band to root, trimming the former until it corresponds with the festoon of the gum and is of uniform width around the periphery of the root. The wax is now warmed slightly and the crown with post, in *situ,* is pressed to place on root. Chill and remove. If the band does not come away with the wax it will have marked it sufficiently so that it can be laid in place and tacked with a little additional warm wax.

After getting proper contour of the surface of wax which unites band and crown chill again and try in to be sure the adaptation of crown band and post is accurate. Remove, insert sprue wire in wax, carefully remove porcelain crown, wash the oil and glycerine mixture off the wax with alcohol, invest and cast as for inlays.

There are two reasons why it is well to use a post of not more than 16 gauge.

First, because less cutting of the root is necessary, and, second, because the post is so much smaller in diameter than the hole in the porcelain crown, that wide latitude is possible in the angle at which the artificial crown may stand as compared with the line of the root.

The patient may be saved considerable pain and yourself much time if at the first sitting the root is only partially prepared and a temporary crown adjusted. This temporary crown may be the mate to the permanent one and is attached to the root by means of a stick of orange wood which is first fitted snugly to the porcelain crown, then quickly cut down by coarse sand paper disks to fit loosely in the root. Warm some gutta percha (I use the white baseplate gutta percha), dip in oil of cajuput, press the gutta percha around the orange wood post, then without drying the root press to place, remove, cut away surplus gutta percha. repeating the operation of trying in until just enough gutta percha remains to press gum back from the root. Dry the root, cover the gutta percha with cajuput and carry crown to place.

The patient now has a crown that may be comfortably worn for several days if necessary and is spared the inconvenience and discomfort of being without that tooth while the permanent one is being made.

At the subsequent sitting the gum tissue is back out of the way of the operator and the preparation of the root is completed without much hemorrhage and with comparative comfort to the patient.

In crowning upper bicuspids, which in almost all cases have more than one root, this process is one of utmost simplicity.

Prepare the case as for a single rooted tooth, fit the post (which should generally be of 19 gauge clasp gold wire threaded) to the canal to which it is most easily adapted. It is occasionally necessary to bend the post slightly, but this is of course very easily done. Prepare the other canal for a post of the same gauge. This post must be barely long enough to reach just a little below the end of the root. The wax impression that has previously been taken with the other post in place will mark the opening to this root. The extra post being now in place in the root the wax which holds band, crown and the other post in place is slightly warmed and carried to the root. Chill the wax, remove carefully when the extra post will be found in place, as it is held by the sticky wax.

In investing a case of this kind great care should be used to avoid displacing or changing the position of the post.

In cases where the opening in the root is very large by reason of decay or other cause the 16 gauge wire is plenty large enough because the wire may be covered at the root end with softened wax which when introduced into the root will assume the exact form of the opening of the root and is reproduced in the gold casting.

ESTHETICS IN CROWN AND BRIDGE WORK*

P. A. PYPER, D. D. S., PONTIAC, ILLINOIS.

The human race seems to be very prone to follow a leader in some fad, or custom, and from time immemorial we have had this demonstrated. Sometimes there have been wise leaders and some fads have been wise ones—but again there have been unwise and dangerous leaders; some customs and fads have been dangerous ones. Man instinctively follows a leader; he becomes the sane leader who has first learned to follow. To have learned to be teachable is the infallible test of a natural teacher.

We find, according to history, that there have been epochs or ages of these fads and each in its due time proved itself either worthy of its place in history or has died a natural death from non-support or uselessness; and some of the most dangerous did much harm before our judge of all judges—Old Time—had pronounced his wise judgment upon them.

As dentists, we are unfortunately called upon to be prophet, judge, philosopher, mechanic, and last, equal to if not greater than the others, an artist in the fullest sense of the term. Looking back upon the pages of dental history we are forcibly reminded of what a blessing to humanity it would be if we might only read the future as easily as we are reading the past. Think of the many, many fads and fancied ideas that would have been cast aside before they committed the great harm they have done to humanity.

We look upon the early dentistry and properly call it the extracting age: all they knew at that time to do. It did one thing—cured the toothache, but think of the loss in the cure! How they were tearing down that which the Creator of all that is good has given us for a distinct purpose in usefulness and harmony of features. Think of that array of teeth standing there in their prominent position, adding special character to the individual and having an especial work to do, all lost one by one until the entire esthetical harmony is completely destroyed.

The loss then demanded that something be done to take their places and the gold plate and porcelain teeth were introduced.

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*Read before the Illinois State Dental Society, May, 1912.

These had their faults, but were a good substitute that could not be appreciated at the time; and the rubber plate age was introduced. And on account of its being cheaper and more easily made, it took the profession with a whirl and carried them upon its popularity so fast that the great evil was not noticed until the damage to the tissues of the mouth had been done! Think of the thousands of teeth that went to make up the harmonious anatomy of those who lived at that time all sacrificed because the cure or arrest of caries and diseased gums was not known.

"Necessity is the Mother of Invention and Discovery," and about this time it did its good work by introducing into the dental profession the greatest of all discoveries in dentistry—the art of saving teeth by removing the caries and restoring with an indestructible material; in other words, the introduction of the gold filling age. Thousands upon thousands of teeth have been saved and it is still standing the test of OLD JUDGE TIME, who tries the theories of all men.

Then came the Amalgam Age with all its ups and downs—but still it saved teeth.

Profiting by the experience of those unfortunate ones who lived before the introduction of those two ages, we most certainly should appreciate the great good of this wonderful human benefactor, the art of *saving teeth!* We have had many fads and fancied ideas of materials and methods and uses of the same, but, in general, we have been working towards that one central idea and purpose—the saving of teeth, because they are the greatest factors to the human facial contour and to the preservation of the esthetical aspect of the features.

There has been only one little flurry to creep in of late years and that was the painless extracting age. People thought because it would not cost so much and cause them no pain, they would rather lose the tooth; some dentists considered it too much trouble to treat and fill the roots of a tooth, and so advised this easy and painless way of curing all such cases. But we are glad to note that we have educated most of the dental profession to the realization of the great value of a tooth and they seldom make so sad a mistake as to cater to the wishes of any such unfortunate patient who has never had the chance to learn its real worth.

This brings us down to a later date in dental history, where we find many dentists who are in such a hurry in putting in gold and amalgam fillings that they constantly annoyed both themselves and their patients by becoming loose and dropping out. Then, that they might give their patients something that would cause them less annoyance in that respect and get a little more money than for an amalgam filling, they became enthusiasts of the gold crown age, one of the most used and misused of all restorations introduced in dental history up to the present time.

Coming a little farther down in our history, we reach the present decade, the age of the gold inlay and many other schemes and devices, too numerous to mention, all having their place and use in good dentistry, by which many a tooth, with its esthetical harmony, has been saved, instead of being slaughtered and replaced by some disharmonizing artificial substitute.

We think the present dental generation is the most scientific, progressive, and learned generation the world has ever known; we have the advantage of Father Time to give us the real and only practical test of all science up to the present. He has shown us both the good and the bad of the different epochs of dental progress. Then right along, hand in hand with old Father Time, we have had the good god-fathers and prophets such as Doctors Cushing, Miller, Haskell, Gilmer, Black, Johnson and many others, who have been our guiding stars; who have warned us, besought us, and shown us the right and only path that leads to success, and who have also warned us of the many dangers that will befall him who wanders away from that path of truthful, righteous, and honest dentistry. We are living in one of the most scientific and progressive ages in the histroy of dental science, profiting by the past, associating ourselves with the science of the day, and we ought to be prepared to meet the ever increasing demands that are confronting us as practitioners of the dental profession.

We are now ready for the test and for convenience we will imagine ourselves in our office when a patient calls for consultation. She has been having dentistry done for twenty-five years by Drs. A., B. and C. (and I think, judging from appearances, by X., Y. and Z.) This is the condition at the present time of the upper jaw: Right central dead, badly discolored, with gold fillings in mesial, distal, labial, all leaking. Left central in about the same condition, excepting that the pulp is alive. Both laterals with Logan Crowns, and recurrence of caries at gingival. Right cuspid with open faced gold crown, supporting bridge for two bicuspids to first molar; heavy gold caps on bridged teeth. Left cuspid having gold fillings in mesial, distal and cervical, all leaking and badly discolored; two left bicuspids wearing gold crowns with gingival misfits and bad fits and giving the gum fits. This patient is well dressed, comes from a good family, has spent lots of money on her teeth and is willing to spend more in order to have her teeth correspond with the rest of her appearance and surroundings.

Now comes the time in a man's life when he is put to the test that often means his destiny for good or bad; and many a man's reputation has been made in just one successful operation—it acts as an endless chain and continues to go on and on for the man's success; but again, if he makes a mistake in diagnosis, or in the operation, the case becomes as a millstone around his neck. This is a time when the dentist is put on trial before the greatest court in the land. Time is to be the judge and he is certain to deal justly; no bribing of him, no jurors to fix it with, not even a jack pot, and no elaborate oratory will win your case for you. You may put up a nice little story and it may sound good to the patient. But beware! Words are soon forgotten. Time will tell a story that speaks louder than words.

Possibly you have made up your mind by this time what you would do in this particular case, and no doubt you have chosen the right plan, but for consideration of the different plans that might be used, and which might be as practical for many more, we will go over the case briefly.

We must have some definite plan, as all the characteristics of the original case are detsroyed. You must, then, create one for the individual. Her complexion and her temperament must be considered to secure a harmonious effect, as well as the mechanical part of the operation. One must have an imaginary picture in his own mind of the completed case before he starts, in order to make a successful operation.

We will then start (in this case) with the two central incisors, both strong enough to endure all physical strain. Would you refill with gold? Time past says failure. Are you justified in cutting those teeth off and replacing them with crowns. Have you any right to take the life of the pulp in that tooth when every indication shows it healthy? Or would you do as seems to be the practice of so many—put on two bright, shining gold crowns? Just think of it—if that was your wife or daughter, who came home from the dentist, greeted you with her pleasant smile and those two glaring gold crowns shining at you. I do not know what you would do if it happened to you, but I know if it happened to any of my kin there would be some dentist licked.

You may say that no member of such a reputable body as the Illinois State Dental Society would perform such an operation. Well, I hope that they would not, but listen—I have seen just such work as this in Bloomington, Rockford, Quincy, Danville, Peoria, Springfield, yes, even in the great hub of the universe in dentistry, Chicago. When all of you go home look around and if you can't find any such, come to Pontiac. We used to have some advertisers. Who is to blame for this horrible mutilation of human harmony? Think it over—can you say "not guilty"? Have you done as much missionary work as you should in educating your patients concerning this disharmony, that they may pass the good word along to their neighbors and friends—that they may know better than to allow any dentist to mutilate them with such unsightly work? If the dentist does not know any better, he needs some missionary service himself.

By making a careful examination of those two teeth to ascertain what is the real physical condition, we can see the effect of past efforts, and must then consider the part they are to assume in the general plan we are about to undertake. We look around for something that will give us, first, Strength; second, Protection, and, third, esthetical appearance. As we make a survey of all the different kinds of restorations, we note some that will serve us in one respect but not in the other two; some that will serve us in two points but miss in the third. Finally we come to the one that combines strength, protection and esthetical appearance—the Porcelain Jacket Crown! With it you sacrifice less tooth, leaving the greatest possible strength, you protect all parts from recurrence of caries and have the greatest possible opportunity to conform it to any particular shaping necessary for the individual case or general plan you wish to pursue in the restoration. It gives you the opportunity to add just such tints as are necessary to give the characteristic base colors indicated in the temperament of the individual, shading them in such a manner that they will give the necessary effect, which is often lacking in the tooth on the market. Sometimes it is just a touch of yellow, or a tint of gray, or again it is a touch of white to give the effect of a high light; you have the opportunity to give them a rounded surface and lessen the broad appearance, or a longitudinal furrowed effect so characteristic in some cases, and often a few horizontal lines near the cervical margin, resembling erosion marks, will add greatly to their natural appearance. When you have followed out these observations and secured the desired effect you have certainly given the patient the best possible restoration and you have obtained a good starting point from which to follow on to the other operations.

Next we come to the two laterals. Will we use the Logans again when we know they have permitted the recurrence of decay at the junction of crown and root—first, because it was difficult to make a good joint, and, second, because there was a dissolution of the cement owing to the peculiar effect of the secretions of the mouth at the gum margins. Another reason—the pins are often not strong enough to withstand the strain that comes upon them and they bend, throwing the tooth out of natural alignment. Some might say, "Use the detachable crown and cast gold abutment," since that would make a good joint, but there is that same cement condition. Then comes another danger—you increase the size of the pin to prevent bending and you weaken the root, causing the greatest of all calamities to happen—the root splits! Gentlemen, the loss of that tooth in the first place was great enough, and now you have lost the last hope. How many of you would deliberately lose a lateral root for one hundred or two hundred dollars, or even more money? And here it has been lost just through one of these causes—carelessness, thoughtlessness, ignorance or mechanical insufficiency. Look around you at other mechanics and builders and study their methods and principles of meeting the physical forces and strains that come upon their constructions. You may say the comparison is exaggerated, but the principles and laws in physics are the same in their application to the root and its restoration; it needs the strongest possible mechanical operation; and it seems to me that the platinum band and cope, with 16 gauge, square iridio platinum post, will protect that root from recurrence of decay, prevent splitting, and assure the strongest possible attachment for cementing on a detachable crown or for baking it to the band and pin. I prefer the baked attachment with high fusing porcelain 2,560 degrees; it is about the same fusing point as the tooth and fuses to it as one mass, and expands and contracts less than the lower fusing bodies, and is much stronger; it gives me more chance to change the alignment and extend the porcelain over the lateral portion of the band, giving a better effect, and enables one to vary the shading of the tooth and thus break up the monotonous uniformity found in the teeth on the market.

For the left cuspid, the condition is so much like the central incisors that it seems to me there is nothing that will serve any better than the porcelain jacket crown, enabling you to arrange the contour and alignment to suit the others and, best of all, to arrange the shading to give the best possible effect.

The right cuspid is a physical wreck, so badly decayed and discolored from that open faced crown, that we have to destroy the pulp. Here comes the problem of the attachment for a bridge. Will you go back to the gold crown age and put on a bright, shining and conspicuous gold tooth, so that every time she laughs you feel sorry for her to think she has met with such a deformity? Why not use a platinum band, cast base cope and pin fitted to a detachable crown?

Next is the six-year molar, which already has a gold crown. There is nothing that will give any better service or make any better atachment for a bridge than to use a well fitted gold crown, as in that position the color is not conspicuous. The connection between the abutments is a problem of many plans and disputes. Which way is the best? For my part, I prefer the detachable porcelain crown, set upon a cast base connection from cuspid to molar. This gives the necessary strength, makes it possible to arrange a thoroughly hygienic piece of work, and at same time use an all-porcelain tooth with no gold showing and none to destroy the translucency of the porcelain. We have many men who spend much time in selecting teeth to fill just such places and from all appearances before the operation is completed they have chosen just the proper shade, but after everything is finished we discover a very decided disharmony in color! Then it is too late to correct the evil. Many such mistakes are made by the poor judgment of the operator, who fails to recognize the primary colors and their combinations in the tooth, and, second, he fails to recognize them in the artificial tooth. Just imagine selecting a tooth with deep gray color in it to place beside one with no gray; then use that tooth with a gold backing destroying what translucency it did have, thereby intensifying the gray color and making it look like a dead tooth. Gentlemen, you know we see too many dead teeth, we have too many deaders in our profession, and the work they turn out. What we need is live, wide awake men who can see live color in teeth, who can supply the missing ones with artificials that harmonize and give character and life to the individual.

The gold crowns on the two left bicuspids were the kind that the operator pushed the band up as far as the patient would or could endure, on account of the misfit and impingement upon the gums. He had soldered a thin top on them with special emphasis on the thin. Consequently, the crowns wore great holes in the occlusion, causing the dissolution of the cement and making great storehouses for infections. The gum has been keeping up a warfare upon its impinging antagonist until it has become so irritated that it has receded, leaving a nice space between gum and crown where Mr. Caries has taken squatter possession of the territory and begun excavating in a fertile field of action. Soon he has multiplied and increased his field until the tooth is left in a very disastrous and dangerous condition—all due to some one's carelessness in not trimming the root to its proper bevel and then fitting the band accurately. What misery and discomfort is caused by either carelessness or ignorance in not attending to these things, they which are of the greatest importance in a successful operation. On the other hand, in this particular case, if you had used the very best gold crowns mechanics could produce, had you performed the best possible operation for this case? Compare those two with the rest of the mouth. Have you followed out the plan of the great Creator of mankind, who has so created all things that there is harmony and character to each individual?

Think of that daughter of yours with her laughing smiles, showing a perfect set of harmonious teeth that are a pride and comfort to her and her admiring friends—then let her come home some day with that beautiful harmony lost, her pride hurt, her smiles hereafter suppressed because she is ever conscious of the unsightly display of those unnecessary, uncalled for and disharmonizing gold crowns. What would we think of a musician who had never studied harmony, that great essential to succes and achievement in his art? What would we think of an architect who would replace two or more of the white pillars in his veranda with bright yellow ones? Yet every day we are constantly seeing just these things done in dentistry by men who never stop to consider esthetics. Is it any reason because the other fellow does it that we should, or because a patient calls for a gold crown we should grant his wishes? You are the doctor! It's up to you to diagnose the case and prescribe the kind of remedy to be used. If you are in doubt, call in counsel and advice on the case; it is far more honorable to be honest and sure you are right, rather than be sorry when it is too late.

We frequently come in contact with a different class of cases, those who have been so unfortunate as to wear their teeth off down to the gum line. This is caused by a nervous rocking of the teeth together, or some unnatural masticating forces, and as a usual thing, there is very little caries present. Here is another case where the dentist must be his own architect, contractor and builder. His landmarks of what may have been the original shape, size and color are practically all gone; he must then create a something that will replace that which is lost and what is more important, he must replace it with that which will become a part of the patient's general character. Of course, he might do as I have seen done—take an impression and some wire measurements of the teeth and send it to the dental laboratory man, let him be the architect and builder; he is the man who reads character by mail (that is when the mail contains the money) and he will return his diagnosis and prognosis in a full set of bright gold crowns, all ready to wear; and the dentist has only to mix a little cement, stick them on one by one and the patient is soon all decked out in his new teeth. He goes out of the office thinking he has a gold mine, a treasure.

Alas, This poor soul awakes some day to find holes worn in his gold mine and treasure; he discovers he has a gold brick instead and the boomerang comes back upon the maker.

Take a general survey of the conditions in these cases and you will find, first of all, that the bite must be opened, a little observation will soon show the amount the molars need to be lengthened. Very often a gold inlay capping the entire end is the best possible plan, and again heavy cusped gold crowns are the most advisable.

But for the anterior teeth, there is always some form of porcelain crown that can be used.

As a rule, if the pulps in these teeth are not already exposed and dead, they are nearly so, necessitating their removal.

The powerful forces and swinging movements that originally caused this entire abrasion must be considered and the most durable kind of restoration must be provided. This, in my experience, is a band and cast cope attachment to the root and a detachable crown baked to the band and pin, letting the porcelain extend over the labial portion of the band. This makes it possible for you to have a broader band, giving stronger attachment, and at the same time gives a lengthened appearance to the short tooth you are compelled to use; as the corresponding lower teeth are usually shortened from the abrasion. This gives you all possible range for the adjusting of the teeth to articulation, length, size, color and general harmony with the lower teeth, and most important of all, you can make them look as if they belonged to the individual.

Our Creator has made us with a physical stature, features and individuality that gives us an individual and harmonious personality.

Then our first duty, as esthetical dentists, is to retain that original esthetical appearance, by becoming sufficiently proficient in the prophylaxis, or hygienical treatment of the mouth, as to prevent all attack or destruction of that original denture which presents more of a harmonious and esthetical appearance than any of the known creations of man up to the present time.

If the patient has not had that necessary care, and destruction has taken place in the form of caries, it is our duty to replace the lost parts by the most harmonious methods possible. That may be a porcelain inlay, a gold filling, or it may be that latest and most scientific method and savior of teeth, the cast gold inlay.

When all of these have failed, or you have not had an opportunity to see the particular case until destruction of the crown part of the tooth is complete; then comes our heroic service, the saving of that root that there can be a restoration upon it so that it can take up its service and aspect, for if that be lost, we today, with all our investigation, knowledge and applied science, are not able to replace that which is lost in the extraction of a single tooth.

Finally, if all this has been neglected or ignored, or by lack of opportunity the patient has not received the necessary attention, or has been so unfortunate as to fall into the hands of a dentist who is still living back in the dark ages and there is a loss of one or more crowns of the teeth, or the loss of one or several entire; or loss by mastication friction or from any other causes, it matters not what, when they call upon us for our services it is our duty to give them the best possible service that can be given in each individual case. We must make a careful and sincere study of all conditions heretofore mentioned in this paper, and take plenty of time to do the work well and, when the case is finished, if it be one tooth, two teeth, or any number, singly or collectively placed, whether a complete restoration of an entire upper or lower set of teeth, or both, it must be so constructed or built that it restores those natural conditions of strength, harmony, and esthetical appearance, enabling the patient to leave your office pleased and satisfied, and the next day she will return smiling and say, "Oh, Doctor, I am so well pleased with the work! and my friends all say they look as natural and becoming to me as if they were my own teeth." She pays her bill, and then *you* begin to smile and the whole world smiles with you.

PROCEEDINGS OF SOCIETIES.

AMERICAN DENTAL SOCIETY OF EUROPE, THIRTY-NINTH ANNUAL MEETING, HELD AT BRUSSELS, APRIL 5TH TO 8TH, 1912.

DISCUSSION OF DR. DUNN'S PAPER, "SHALL WE BE ABLE TO IMMUNIZE AGAINST TOOTH DECAY?"

Dr. C. F. Bödecker (Berlin)

said Dr. Dunn had to be thanked for the painstaking way in which he had prepared his interesting paper on a subject which undoubtedly deserved great attention, because it was the object of all dental surgeons to reduce the number of carious teeth. He did not think it was possible to stop the decay of teeth by the use of antitoxins. It was true there was a circulation in the dentin and also in the enamel, but it was so slow that it could not carry the antitoxin. That was proved by the fact that bone infection yielded very slowly to treatment with antitoxins on account of the lack of circulation. There were many patients in which decay seemed almost to stop for three or four years, to the agreeable surprise both of the patient and the dentist. The reason for that was probably to be found in several causes, one being that up to the age of twenty-five decay was more rapid than later on; after twenty-five the teeth seemed to calcify more and were more resistent to caries. Another reason was that the bacteria entered through the fissures, and if they were once filled the decay almost entirely stopped. There was no doubt that the proper functioning of the teeth would stop tooth decay. Very little decay was found in wild animals, but when they were in captivity they suffered almost as badly as man. That was no doubt due to two factors, first the lack of proper food. and secondly the lack of proper exercise. With regard to the difference in tooth structure, it was an old question, and it had been denied for thirty years that there were soft teeth and hard teeth. Why was it that a bicuspid was sometimes found standing while all the surrounding teeth had disappeared to the roots? The teeth were bathed by the same saliva and were situated in the same surroundings and yet there was a difference in structure. Often a proximal cavity of one tooth was decayed and the proximal cavity of the adjoining tooth not decayed. It was not a general infection of the mouth, because if that were the case all the teeth in the mouth would be equally attacked.

Dr. A. Pfeiffir (London)

said it was difficult to discuss any scientific paper without having previously read it, but he wished to thank the essayist for having brought it forward. He was sorry that in enumerating the previous masters he did not include the name of the modern Pasteur, Professor Flexner of New York, who had recently brought out a serum which had proved the most wonderful of all the sera, inasmuch as he had been able to reduce the mortality of epidemic cerebro-spinal meningitis from 100 per cent to 20 per cent or 14 per cent. Recently he had had the pleasure of hearing Dr. Flexner at the Royal Institute of Public Health in London. Having in his first lecture dealt with biological bases he went very deeply into the various resisting agents in the blood. In his serum for the treatment of epidemic cerebro-spinal meningitis and acute poliomyelitis he had incorporated oleate of soda, which ingredient he found had the greatest bacteriolitic effect in whipping the substances of the blood into action. That had led him (Dr. Pfeiffir) to think that it was the presence of oleate of soda in dentionol that had such a powerful bacteriolitic action, far out of proportion to any antiseptic power it had on infected tissue. As was well known, it was used in inflamed conditions of the mouth, especially in pyorrhea.

Dr. George Cunningham

said the paper was one of the most brilliant and illuminating condensations of bacteria slcience he had ever heard. The only point that seemed to him a little difficult was the opsonic treatment of pyorrhea. Experiments had been carried out, notably by Goadby in England, on that matter, and he had been hoping to have some information given in the paper. With regard to general caries, it was a great many years ago since he heard one of the most advanced thinkers say that no attempt should be made to save the teeth of children, but that all the money and time should be devoted to finding out a serum; he himself, however, had not wasted any time trying to hunt up any magic thing of that kind. With reference to pyorrhea and the opsonic index, he was looking for a case where improved results had been found without first of all the mechanical and surgical treatment of removing the tartar. Such a case, if found, would give some measure of the effect of opsonin in preventing pyorrhea by staphyloccocci and streptococci treatment. One point had not been sufficiently dwelt upon in dental literature, the question of the blood itself, and he was glad when the essayist laid stress on the blood being absolutely a tissue. Improvement would possibly come through the improved condition of the blood of the mother and in that way strong teeth would be built up and when the child reached school age there would be a different population to work upon from that which existed now He did not think there was any fitter society to which the communication could have been made than the A. D. S. E., which was the first to assist Miller with material on which to work.

Dr. Dunn

in reply, said he could not in a short paper enter into side issues such as the treatment of pyorrhea. No one could throw any doubt upon the work Mr. Goadby had done in London, but that marvelous work had had nothing to do with the decay of the teeth. The work of Professor Flexner was so well known that he had thought it would be taken for granted and need not be mentioned in the paper. He had only given the names of the pioneers of the work.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held March 13th, 1912, with the President, Dr. J. G. Reid, in the chair.

Dr. L. L. Davis read a paper entitled "Neuralgia and Sensitive Dentin."

DISCUSSION.

Dr. P. J. Kester:

I have been very much interested in this paper, but I am not prepared to pass an opinion on the judgment of the author as to the value of the so-called prophylaxis which is being practiced by certain followers of that system. I happen to be quite closely acquainted with some men who are following the prophylaxis to an extreme degree, although the results they are getting are satisfactory if the reports that are made are true. and I have no reason to doubt their truth. It seems to me, so-called prophylaxis which is being practiced today consists very largely in keeping the margins of the gums, and the necks of the teeth. clean, removing all irregularities, or all protuberances, or whatever may be located at this particular point, and keeping free the margins of the gums. It would seem from the reports I have heard that it must be a good thing.

With reference to neuralgia, I have known personally and by observation that there has been a neuralgic tendency this winter with a great many people, due to the invasion of certain microbes probably. It has been almost epidemic. My observation has led me to believe that it is produced by a specific cause, because the symptoms which have been manifested and described by the essayist were almost identical, regardless of the symptoms of the neuralgic disturbance in the supraorbital and infraorbital nerves, and even some disturbance which has extended to the mastoid cells, a general neuralgic tendency to those particular membranes, largely air cells, and this tendency can only be produced by the invasion of certain kinds of micro-organisms which were prevalent, and are perhaps a modification of the so-called grip microbes.

Many of you will remember that I was laughed at when I read a paper before this society a good many years ago on the wooden toothpick and its horrors, going so far as to insist that I could tell by the mouths of patients where the wooden toothpick had been used continuously on account of the peculiar physical deformities which arose from its use. When the wooden toothpick is forced between the teeth particles are left in there, and then the forces which have to do with the repair immediately set to work and undertake to carry off the particles of material which have been left. and in doing this there has not only been a general disturbance produced, but there is a deposit of material which is placed there which enlarges and broadens the jaw through the use of the wooden toothpick. While these remarks do not strictly bear on the subject under discussion, still the author of the paper alluded to it. The greatest abomination in the way of tooth tinkering by the patient is that which is done by the wooden toothpick. It is an absolutely harmful thing to use. I think more damage is done from the use of the ordinary wooden toothpick, as it is commonly used and chewed up, than almost any one thing that occurs to the teeth. It produces more disturbance than the ordinary decay of teeth.

As to the various disturbances which he has described, we are all familiar with them. I think we know what they mean. I can remember distinctly the peculiar manifestations in the peripheral ends of nerves which are in sympathy with the nerves of the teeth and gums and surrounding tissue.

Dr. J. E. Hinkins:

I have enjoyed the paper very much. I have also enjoyed the discussion by Dr. Kester, and I agree almost entirely with him about the wooden toothpick; but my observation has been that neuralgia and sentitive dentin are due more to the assimilation of foods I am very much inclined to the belief in my own practice that the worst cases of neuralgia I have to deal with are brought about by overeating and the poor assimilation of foods or indigestion. In this connection, I will relate a case that came under my observation within the last week of a gentleman who had been in the South, in Savannah. He is a hearty eater. He overloaded his stomach there. The weather was inclement. There had been much rain, and he came back yesterday, with the result that he had to see his physician, and incidentally I was called in. After going over this gentleman carefully we could not attribute his condition to anything else than an overloaded stomach. After putting him through a series of mild Turkish baths he was very much improved. His condition was such that we did not dare give him a good cathartic, and we also did not feel at liberty to give him a Turkish bath, so the electric bath was used and mild massage resorted to, and after three days' treatment the neuralgia left him entirely without the administration of any medicine. He was simply put on a water and an alkali diet. When he came to Chicago the margins of his gums and the necks of the teeth were so sensitive that in passing an ordinary instrument over them he would squirm with pain. By testing his saliva and urine we found there was an excess of acid in his system. The treatment we gave him was alkaline, vegetables and alkali water. He was given plenty of water to drink in addition to of the use of the electric bath. It was surprising to see the reaction we got on the system. Normal perspiration was brought about by the use of the electric bath and the mild massage. His urine had some albumen and some hyalin casts, and it was very thick and dark, with a large percentage of urates and phosphates, and things of that kind, and after the third day of this line of treatment he was almost like a new man. The neuralgic condition, or the sensitiveness of the teeth, disappeared almost like magic without any medicine, simply by eliminating this poison that was stored up in his system. It was a revelation to me to see what could be accomplished by those means in these chronic cases of neuralgia. When he came here last Thursday he was miserable. He could not sleep, and could not eat anything; the doctor said we had to do something for this patient; that he was so full of toxins that something had to be eliminated from his system, and so we tried the method I have mentioned with gratifying results. I dried the gums and applied heat around the necks of the teeth, and every tooth I touched from the first molar around to the other first molar in the upper jaw with a saturated solution of nitrate of silver the man would yell with pain when you touched him. By Sunday he was comparatively comfortable. The only thing I applied was a pellet of cotton saturated with nitrate of silver around the gingival margins of the teeth. Sunday I removed the deposits as well as I could and washed the teeth with iodin water solution, and he started for New York last night, feeling very comfortable.

Dr. C. N. Johnson:

This question of neuralgia is one that has always been a dilemma to the profession of medicine and to the profession of dentistry. The essayist has called attention to the possible cause of some of the neuralgias that our patients suffer from, as sensitive dentin, referring particularly to sensitiveness at the gingival margins. I believe that neuralgia is caused by either one of two things, either a definite local irritation of the nerves whereby we may get a reflex pain, or by a lack of tonicity in the nerves due to systemic poisoning of some kind, through faulty elimination, faulty metabolism, or something which depresses the nervous tonicity of the syetem. A patient in that condition is likely to have neuralgia manifested at different points, particularly at some point which has been exposed to sudden changes of temperature. You take a patient in a run-down condition, who exposes his face to a draft in the sleeping car, and you will have a case of neuralgia on that side of the face. There is a lack of tonicity in the nerve filaments.

The neuralgias we have most to deal with are those connected with the fifth pair of nerves, due to irritations, and the patient may have any number or kinds of irritation. The patient may have an impacted third molar. He may have frequently a neuralgia whose cause is obscure. As a matter of fact, I believe impacted third molars and impacted teeth have been the cause of very many cases of neuralgia which have kept patients suffering for years, and up to the time the X-ray was introduced the profession was practically working in the dark. We may also have, and frequently do have, neralgias induced by a suppurating pulp, one that is just beginning to take on a gangrenous condition. The irritation of that pulp will bring on a neuralgia which usually manifests itself on that side of the face along the jaw.

The particular neuralgia that the essayist has referred to is due to sensitiveness of the necks of the teeth—a form of neuralgia that I have not often seen or which I could logically attribute to that cause. It seems to me, that while we may have a sensitive condition of the necks of the teeth, I cannot imagine that we would frequently have a reflex neuralgia from that cause. We might have extreme discomfort at the immediate point where the irritation would be applied, namely, at the neck of the teeth, but I have not had it called to my attention. I shall, however, study it more carefully in the future in the cases of neuralgia that come to me.

The case referred to by Dr. Hinkins is a significant one. It explains some of the cases of neuralgia in the past whose causes have been obscure. That kind of neuralgia is one that we almost invariably are able to control in a short time. The most distressing cases of neuralgia are those due to irritation of impacted teeth or some obscure causes of that kind, some bony growth at the foramen of exit in some of the nerves. I am obliged to the essayist for calling our attention to this as one of the possible sources of irritation of these nerves whereby we may be able to trace these neuralgias more intelligently.

I had a case in my office today. The patient applied to me thinking there might be something wrong with the teeth. I looked the case over carefully, and the only possible thing I could discover connected with the teeth which would cause neuralgia was that near an upper molar there had been a recession of the gum along the lingual root; that tooth had been loose for some time. There was no pus discharged from it at all, and no soreness on pressure. I tested it for that first, and the patient said to me that she came with the impression that the tooth was so sensitive that it could not be touched. That was the feeling she had. She said she had suffered with this neuralgia all day yesterday and could not believe it possible that I would be able to touch it without giving great pain. In questioning her, I am satisfied the neuralgia in her case is due to a lack of tonicity of the nerves, something entirely different from anything connected with the teeth.

A second class of patients whom we are called upon to treat are those in whom we must look away beyond the immediate point of irritation. We must look into all the possible factors that might enter into their cases, and I believe in the future, very much more than in the past we will be able to limit these neuralgias. One of the most distressing neuralgias I have encountered has been due to definite irritations along the nerve trunks either from impacted teeth or from a growth at the foramen of exit, and we will be able to trace the cause of such a neuralgia. The X-ray has done much in that respect.

I have been put in a different mental attitude towards these neuralgias, and shall look for sensitive dentin in the future as a possible factor.

Dr. J. H. Woolley:

Dr. Johnson's remarks have suggested to me the thought that he has expressed, namely, we have got to look beyond what are seemingly the causes of neuralgia. Some of the causes may be remote. I think the X-ray is going to reveal to us many cases of reflex conditions, proving to us that there may be a condition arising from the roots of the teeth caused by imperfect filling; that the nerves leading near the apex of the root are affected, and yet the tooth itself, although improperly filled, gives no indication of trouble by an examination of all the different processes.

I recall one case among many that was rather typical. The lady had reflex pains in the face and had suffered for a long time with that condition. I examined the teeth on this side of the mouth where the reflex pains occurred. The teeth, although filled, were not sensitive. After making an examination with the X-ray, I found that the roots of this third molar were imperfectly filled, and after removing the filling and treating the roots of that tooth as perfectly as I could, the trouble passed away. I noticed some little distance from the ends of those roots an inflamed condition. While there was no apparent trouble with the tooth itself, yet there was a reflex condition caused by the improper root filling.

Dr. Elliott R. Carpenter:

I have come in contact with many cases of neuralgia where there was recurrent caries especially on the occlusal surfaces of molars and bicuspids. Food had been forced by mastication through the line of break between the filling and cavity margin and had produced intense neuralgia which is sometimes apparent in the cheek, sometimes in the ear, and sometimes in the eye, and the same thing I have noticed and reported before this society several years ago where through the malocclusion due to the loss of teeth, the occlusion of the jaws had changed to such an extent that by the loss of a lower first molar and the moving forward of the second and third molars the upper third molar has come in contact with the gum tissue of the inferior maxilla and occluded with it, producing an intense neuralgia from that cause, apparent in the one case I remember, in the eye, and in another case in the ear; both cases were referred to me by an oculist and aurist.

Dr. J. G. Reid:

I must confess that the essayist has brought to my mind a peculiar origin of neuralgia which is new to me and I cannot recall many instances where I could possibly trace the neuralgia, such as he described, to sensitive dentin. It might be an aggravation, but it does not seem possible it would be a primary cause. It would seem to me that there would be other hidden causes than merely the condition of sensitive dentin connected with the exposure of the necks of the teeth. I realize that we have a very perplexing condition when we have a mouth full of teeth whose necks are sensitive to the changes of temperature that are exceedingly annoying; but I cannot bring myself to believe that we can have these paroxysms of neuralgic pains to such an exaggerated extent as he describes. There are other conditions we should consider, such as a very low degree of tonicity of the nerves, as described by Dr. Johnson. However, that might be incidental in connection with the neuralgia. The sensitiveness of the dentin would be coincident with it. I believe that where the neuralgias are reflected to the localities of the terminal trunk ends and the nerves, like the infraorbital foramen or the mental foramen, brought about by such things as shaving or touching the face, or anything that would bring on a paroxysm of that nature, the cause is more hidden and deeper than the mere reflection from pains induced by the sensitive necks of the teeth. And what I have said recalls to my mind just such a case as Dr. Davis has described.

A gentleman, about ten years ago, had an attack of the grip which left him in a very bad shape. He did not recover from it for several months. He had a number of pulpless teeth in his mouth. His dentist is dead, and I really think he died from taking care of that man's teeth for the last ten years. I have only had the patient one year and during that time I pretty nearly died myself. His dentist took great care of him, and all the pulpless teeth that he had filled in his mouth were well filled and well cared for. After his dentist died, the patient fell into my hands. He had some nice work in his mouth, but I had to do some readjusting and repairing. During the course of the treatment he began to suffer with these neuralgic pains, and he has had them in the right side of his face. He traced them back to the period when he had an attack of the grip, but the neuralgic pains were becoming more intense. Every year he suffered more intensely than the year previously, and about four months ago he came to me for this work. I was replacing a new bridge on the right side of the lower jaw which took in a molar and a bicuspid. After I had placed the bridge he suffered the tortures of the condemned from neuralgia all through the lower part of the jaw, reflected into his ear and through the temple and over the supraorbital and infraorbital nerves. I suspected that he might have a dying pulp. I took the bridge off, and cut into the bicuspid tooth to see if that was giving the trouble, and to my surprise it was not. The neuralgia kept growing worse, and at the time I was treating the bicuspid tooth, if I touched his lips he would go into a paroxysm of pain which would make him almost jump out of the window. He could not talk very much. He could not touch his face when washing without having a paroxysm of pain come on that would drive him very nearly crazy. He could not think. I told him there must be some irritation along the tract of the nerve leading from the mental foramen He went to a physician to see if he could help him. He gave him an injection of alcohol in the terminal branches of the mental foramen. He gave him two treatments, and he has never had neuralgic pains since that time. He said to me that he had not been as comfortable in ten years as he had been after these treatments. This was four months ago. There was some irritation somewhere along the branch, the third branch, of that nerve. Where it is, I do not know. I cannot locate it. It is not in the teeth, so far as I am able to determine.

Dr. Woolley:

Did you get an X-ray?

Dr. Reid:

Yes, but it shows everything is all right.

I have another case on hand of a young lady, thirty-two years of age, school teacher, who has been suffering from pain on the left side. She had empyema of both antra thirteen years ago, but this was cured. She was convalescing at the time she fell into my hands originally. I had taken care of her teeth as well as I could. The first molar had been extracted on each side to treat the empyema through the socket of the molar. About five years ago the pulp in a second bicuspid died and very violently terminated in an alveolar abscess before anything could be done for it. It was so abrupt that there was no chance to do anything with it. I opened up the pulp, cleaned it out, and filled the roots. This was done five years ago, but every year she comes back, sometimes two or three times a year, with trouble over this side of the face, and I have located it over the first or second bicuspid tooth. The first bicuspid tooth carries a crowd. It was crowned before the other tooth was treated. I feel pretty sure it was well filled, because to determine it, about two years ago I had an X-ray taken to see if I could locate the trouble in either one of the bicuspid teeth. The X-ray showed absolutely the teeth to be all right. But, as I have said, she comes to me three or four times a year suffering with this side of her face, and she will invariably locate it over the bicuspid tooth. Last Saturday she was in the office again and said she had been suffering all the week.

DR. CARPENTER:

Did she have a cold?

DR. REID:

No. She came in suffering and said, "I have got to have something done; I want you to find out what the trouble is," and she assured me that there is where it is.

DR. CARPENTER:

Does she have nasal catarrh?

DR. REID:

No. I am citing this case to you because probably you may find the cause of it. I said to her, "I have finished my diagnosis in this case, and I am absolutely confident that those teeth are not the cause of your trouble." I have always had that faith and still believe it. I told her that I did not want to be prejudiced about the matter. She told me that the side of her nose in this locality (referring to the inner canthus of the eye) is very painful to the touch. The supraorbital territory is very sore. I said to her, "I am going to turn you over to an otologist and rhinologist, and let him see if he can do anything for you." I went with her last Saturday. He examined the antrum with a reflected light, and found there was no disease about the antrum. He then examined the ear, and during this examination he turned to me and said, "I will show you something," and it was a large amount of wax in the ear. She is a little deaf, but she does not have much pain in the ear. Occasionally the pain is reflected to the ear. Then he made an examination of her nose. He was about three-quarters of an hour in examining both her nose and ear. After he had finished, he turned to the patient and said, " I believe I have found the seat of your trouble. Wax is one thing, but that is not the chief source of your trouble. The chief source of your trouble is in the ethmoid cells." The mucous membrane of the upper lining of the nose, the Schneiderian membrane is very thick, and she has difficulty at times in breathing through the nose The lachrymal duct is sore, and the discharge from her nose, when she is lying on the back, drops back into her throat. The mucuous membrane of the ethmoid cells and upper turbinated bones is very thick, very much swollen. There is much pressure about it. He said it was there the difficulty now lies. He called me up today over the phone. He had an appointment with her yesterday at four o'clock. The first thing he did was to remove a great quantity of wax from the ear. Then he made a further examination of the nose and the ethmoid cells. He was satisfied that he had found the cause of her trouble.

There is a peculiar reflex pain that is constantly present at the bicuspid tooth.

Dr. Woolley:

Did she get some relief?

Dr. Reid:

He has not gone far enough yet; he has not seen her since that time. He has an appointment with her Saturday, and he will let me know the result the fore part of the week. He said she is going to get some relief from the removal of the wax from her ear.

Those are hidden causes of neuralgia that make the hair of the dentist turn grey, and it is very discouraging to have these people coming to you from year to year for relief and you find that you cannot relieve them. The cause of neuralgia in some cases is very mysterious. Here is an instance where that lady, in my opinion, would not get relief at the hands of a dentist. but she will at the hands of this rhinologist.

The plan of treatment that Dr. Davis has suggested for sensitive dentin and the necks of teeth meets with my hearty commendation, that is, using a hot instrument and the oil of cava cava. I have used it a great many times, but Dr. Davis seems to be the only man who has it. I have gotten beautiful results from the use of this agent I never sear the necks of sensitive teeth with a hot instrument without using cava cava, but I do not know whether the cava cava has anything to do with the relief that is obtained by these patients or not. I have permanently relieved many of these cases of sensitiveness of the necks of teeth by that treatment. I have had no one complain of its use, because I did not tell them what I was going to do.

Dr. Davis (closing the discussion):

I have had within the last three months eight cases in which I could trace the neuralgia entirely to one condition, namely, the sensitive necks of teeth. These sensitive necks of teeth are doubtless due to a neurotic diathesis to a neuralgic tendency that may be induced by lowered vitality. But the sensitiveness is there. If you relieve the sensitiveness, you will immediately get rid of the neuralgia, and later on, with the upbuilding of health, the tendency for the whole thing is to pass away. I do not doubt that there are neuralgias which occur from pulpless teeth or from teeth that are in a bad condition, or from exposed cavities that contain food, etc. That invariably carries itself back to the ear. The neuralgic pain from a tooth may be reflected to the eye, along the cheek, or down to and along the ramus of the jaw. In such a case you will find sensitive dentin if you look for it.

I went over two patients very carefully. The first thing I did was to go over the mouth at least three times before I discovered the cause of the trouble, and found it was between the second and third molar away up underneath the gum. When I finally ran my finger up along the gum the patient got a twinge. I pushed some cotton in and forced the gum out of the way, and found the surface free from decay, but with a depression there, so that with the aid of a small bur I undercut it enough to put in gutta percha. I painted the surface with nitrate of silver while the cotton was still shoving the gum out of the way. Later I put in gutta percha, and the patient has had no further trouble. I did not touch on the other forms of neuralgia, but spoke of this particular kind.

I have one patient now, a lady, who has been in the hands of a fairly good dentist. He is not a downtown practitioner; but he advised her about two years ago to come back every month for the cleaning of the teeth, and an assistant had been polishing her teeth. She has not got a tooth in her mouth that I shall not have to devitalize before I get through with her. One of the things I have talked about is prophylaxis in the hands of incompetent practitioners. The gum is well pushed back, well receded, and apparently healthy. A breath of air, a drink of water, or the other extreme of either hot or cold will bring on neugralgia. I have already devitalized the teeth.

DR. JOHNSON:

Why not use cava cava?

DR. DAVIS:

Because there is too much surface exposed. When you take a small groove, when it is really necessary to put in a filling, or do anything of that kind, you can sear the surface with a red hot instrument and you will get a result that will keep the patient in comfort from three to six months before there is a return of the sensitiveness, sometimes even longer. But you cannot do it with nitrate of silver, or with chlorid of zinc. You can do it with a hot instrument and with cava cava. Dr. Reid said he has not used a hot instrument without cava cava. I have tried machine oil, glycerin, sweet oil, and I think machine oil is as good as anything. I have thought it might be the action of the oil that affords the relief, but I have not had results with any of the liquids. If you dry the teeth and put on lots of that stuff, it seems to me it penetrates.

DR. REID:

Dr. Harlan recommended cava cava many years ago for the treatment of sensitive teeth.

ILLINOIS STATE DENTAL SOCIETY MEETING AT SPRINGFIELD, MAY, 1912.

DISCUSSION ON THE PRESIDENT'S ADDRESS.*

DR. H. L. WHIPPLE, Quincy:

Mr. President and Members of the Society: I feel, as our Vice-President does, that there is a great deal of meat in this address, and I have gleaned a few important points from it which I would like to discuss. But before doing so I wish to suggest that we are to be congratulated on having such a broad, liberal, wide-awake President as Dr. Corbett.

In the pertinent part of his address he referred to education along the line of oral hygiene and oral prophylaxis. It seems to me that the work that is being done by the Public Service Commission is very valuable. We have reports of different meetings that have been held throughout the state, and we notice the interest with which the public generally is taking up this matter. In one instance in particular, where the essayist was the speaker for the evening, he was constantly interrupted by pertinent questions from the audience. You will find in attending these meetings the people are becoming aroused. We find in our talks with the children in our offices that the articles that you see in the papers by Dr. Evans are producing a great many valuable results. The children are listening to their parents at home. The parents read these articles, and the children say, "Dr. Evans said so and so." He is not a dentist, but he is saying a great many pertinent things. The education being received by the citizens is going to help the dental profession, because it will make it easier for us to do the same educating. We have been doing it. All progressive men are doing it all the time.

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*For President's address see page 583, Dental Review for May, 1912.

Last June, while I was in Chicago on the state board work, I was invited by Dr. Buckley and Dr. Gallie to visit one of their schools and see the process of examination. I want to tell you it was an interesting sight. There were three of them in one room and the children were interested in knowing what was going to happen. You know how pleasant these gentlemen are. They made friends with the children, and there were Chinese, Jews, Russians, and children of all nationalities. The children, of course, are the ones we have got to work upon and eventually good is going to come of it.

Dr. L. B. Torrence:

The address to which we have just listened is interesting and instructive from the opening sentence to the final word. We are now approaching the shadow of the half century of our existence as an educational organization, and while antiquity counts for nothing, yet when the directing hand is ever guided by a fertile mentality, a noble impulse, and a proper conception of the needs and welfare of humanity, that organization must bring about the promulgation of much good. Had the Illinois State Dental Society accomplished nothing else than good fellowship between the members of the profession, it would have fulfilled a mission well worthy of its birth. And doubtless in the early years of its existence sociability constituted a greater part of the scope of its work, but as the years have followed the horizon has widened, until now we find ourselves promoting a multiplicity of charitable enterprises for the betterment of the generation and its prosterity.

The President's invitation to the young men to gird up their loins and prepare to assume the burden of the future is very timely, and it is to be hoped that they will not let opportunity knock and pass to return no more. The recent graduate who attends and takes part in these meetings places himself at once in touch with some of the brainiest men that practice dentistry, not only in the State of Illinois, but in the entire world.

And if you love your profession, and have a proper regard for the character of the services that you give to your patients, you will not let an opportunity pass to closely associate yourself with the sages of your calling.

The ancient adage, "Old men for counsel and young men for war," never was more applicable to a situation than that which at the present moment confronts the Illinois State Dental Society.

As our President has told us, we are today advancing in a great work—Dental Hygiene, oral prophylaxis and school inspection. This work is going to require an enormous amount of labor, and it is right that we should expect the youth of the profession to apply their health, vigor and enthusiasm in the consummation of this task; for it is they who will reap the reward of the labor. It is they who will live to see the future generation rise up and call them blessed.

The President asks "where this aggressive work is to begin," and answers "with the child," and he says, "Children have ever held a place close to the hearts of men." Yes, my friends, many of you may have had experiences that have burned upon your hearts this truth. Many of you have doubtless wept bitter tears over the empty cradle or the silent yet eloquent little shoe.

The world pauses, at all times, in its mad rush of industry, to do obeisance to these little tots whom Dickens calls "Angels of God in disguise." And these are the ones for whom this great society is exerting its utmost to save from destruction. And I would enjoin all members, and particularly our younger members, to heed our worthy President's admonition to get into harness and go at this work; not with the idea of gaining any personal advantage or prestige, but with the idea that you are contributing your little mite to the betterment of the upgrowing generation. And even though you find yourself called a grafter by the ignorant, turn neither to the right or the left, but keep to the straight and narrow way, and the time will surely come when your enemies will be compelled to approve your work.

As to the laity and the best manner of reaching them with the information that they should all know for their own welfare, I am sure each of the three methods mentioned by the President is productive of much good.

It was my fortunate privilege to be present at the public meeting in Belleville with its 1,400 in attendance. If there is any doubt in the minds of any of you whether the public is interested in these matters, I believe that if you will attend one of these meetings that doubt will disappear.

I was particularly interested in noting the temperament of the audience. You all know that if you do not command the interested attention of an audience of 1,400, composed largely of children, it will not be long until disturbances become manifest. Now, while I recognize in the fullest measure the ability of our lecturer on that occasion, Dr. Arthur D. Black, yet I do not hesitate to assert that the subject of the lecture came in for a very large share of attention. A meeting such as we had in Belleville is sure to leave a lasting impression that will result in much good.

But of all the methods now used to reach the public, I am convinced that the individual examination of school children will bring about the best results.

You know how it is when your minister preaches on any special sin to a congregation. Every one persuades himself that it is some other fellow to whom the minister refers. But if he calls the sinner into his study and has a heart to heart talk with him there is no doubt in that sinner's mind about who the minister means.

And so it is with the parent when his child brings home the examiner's chart showing the defects of his or her teeth; there is not the least doubt left in that parent's mind as to whether his child's teeth need attention.

To bring this about means a great deal of labor for all of us. But, gentlemen, anyone who takes up any branch of the healing art must expect to do a liberal amount of charity work. Neither is this charity work confined to the professions of Dentistry and Medicine, but the barrister is also often compelled to give days of valuable time to the defense of some penniless culprit, and he sometimes knows that he is wasting time on one unworthy of consideration. But in our case we are ever doing good no matter whether we receive remuneration for our services or not, we are at least endeavoring to preserve and restore the image said to be fashioned after the face of the Omnipotent One. What could you do, young man, to employ your talents in more exalted labor?

As to the relief fund mentioned by our President as suggested by the National Dental Association, I cannot see why it would not be a splendid idea and a good investment, even though you were so fortunate as to never draw a dollar from it. As for myself, if this movement is taken up by this society, I earnestly hope that I may be able to stay with the fellows that are paying it in. I don't want to associate with those drawing it out if I can possibly avoid it.

And yet we know not but that the beautiful gardens which are today laughing with beauty and plenty shall tomorrow become a barren waste, and we shall become dependent upon our fellows for sustenance. This relief would be a noble work and reflect credit on our society's membership, for after all

"Life is the mirror of king and slave,
'Tis just what you are and do;
Then give to the world the best you have
And the best will come back to you."

Dr. Don M. Gallie, Chicago:

The society is to be congratulated on having a man of Dr. Corbett's ability as presiding officer for this year I am glad that the keynote of the President's address is along the line of preventive measures. Like our associates of the medical profession, the question today is not how to battle with the effect of disease, but more to find out the cause of disease, and the question before the dentist today is not how to fill a carious cavity or treat a diseased pulp or scale the teeth, but how are we going to prevent caries and other diseases that cause the loss of teeth? That is the question that confronts us today.

He spoke of starting with the children. It is very essential to do this, and we have got to tell them something more than that a tooth decays or that a pulp becomes diseased. We must tell them what to eat, how to eat, and when to eat it. It behooves the profession to give more attention to what goes into the stomach and how it goes in instead of merely to consider whether it shall be this or that kind of restoration of a defective tooth.

The most important thing before the dental profession today is the question of diet, and we know nothing about it. Our schools are not teaching it, and yet it is the cause of more trouble than anything else.

Dr. Whipple spoke of the interesting spectacle he witnessed in the Jones School of Chicago. We found in that Jones School that four-fifths of the total attendance consisted of Italians. There were some colored children, a number of Jews, some Syrians and very few Americans. While the dago children were not as well dressed as some of the others, their mouths were clean. We learned that in some instances they had one tooth brush for a family The children ranged in years from six to twelve, and the percentage of decay in the anterior teeth was practically nothing. We saw a few pathologic conditions of temporary molars, but very few with defective arches or with evidences of throat trouble. When we came to the colored children we found their teeth and the condition of their mouths were not quite as good as the Italians. The teeth of the Jewish children were in bad condition and their mouths were not as clean. The American children were the worst of all. Why should that be?

In thinking that matter over I have come to the conclusion that the question of diet had a great deal to do with this condition of the teeth of the Italian children, because there was nothing else favorable. They did not live under a favorable environment and had little or no care, yet we found the condition of their teeth and mouths was superior to that of all other children. There must have been some cause for it, and I believe it was in the diet, and we must know more about it if we would hope to carry on this prophylactic propaganda, which is a question of preventive instead of curative dentistry.

Dr. Corbett spoke of the work done in the past year and of the public meetings that have been held with success. I attended one of the meetings, in Dixon, and the large opera house there was crowded. The pupils of the higher grades of the public schools and high schools were dismissed for the afternoon, and they were there with all the teachers, the members of the school board, a large percentage of members of the medical profession, the pupils from the parochial schools and a large number of parents. Dr. Buckley, the lecturer, began his address, and, like the audience, forgot all about time, and when he got through we found he had talked one hour and forty minutes, and only half a dozen got up and left the opera house before he got through.

I think we are making great progress. We are doing a great work and it is the duty of every man to prepare himself and take up this work in his own little field. It does not have to be in an opera house, but may be in his office. He must know what he is talking about. How many stop and think of the great good the articles written by Dr. Evans are doing? It is simply astonishing. Every one reads them who takes the Chicago Tribune, and our patients are coming back to us with pertinent questions, and we must know a little more than some of us do to answer their questions properly and keep pace with the campaign that Dr. Evans has undertaken and with the work he is doing.

There is a great movement going on at the present time and is gaining ground, but a few long-haired men and short-haired women and a few other cranks have started an organization known as the League for Medical Freedom, and they are having some influence: This league has branches all over the country, and they are organized for the purpose of antagonizing all public sanitary and hygienic measures; and it is the duty of the dentist to do all in his power to counteract the work that is being done by this organization. It is work that is being done by willful, malicious and vicious misrepresentations of our profession. It is the duty of every physician and of every dentist and of every one who believes in the great preventive measures to battle with this organization and endeavor to defeat it. As you know, the cause of it primarily is the Owen Bill, but it does not stop there. It opposes every branch of advanced work that is being presented along health and hygienic lines.

Dr. J. P. Buckley: Chicago:

The previous speakers have devoted their discussions to the most important phase of the President's address, namely, the fifth great epoch of this society, and I think it is well that they did.

There is one other phase of the President's address I will discuss briefly before I take up the discussion of this oral hygiene movement, and that is the relief fund, a movement that was started in the national dental association. Dr. Corbett stated without hesitancy that he did not see how any one could oppose a movement of this kind. Well, I do not believe I am in favor of it nevertheless.

I think one of the saddest things we see in our profession is a man who, in a ripe old age and having reached the sunset of life, is in need of financial assistance. If I were to do anything along that line I would rather encourage men when they are in good health, when their incomes are more than their expenses, to save enough so that they would have a competency in old age. I have received a great many announcements from dentists, but one of the best I have ever received was from Dr. William Jarvie a few years ago in which he announced that he had retired from practice. One of the nicest things I ever heard said about Dr. Black was said at the banquet given in his honor when Dr. Gilmer said that if Dr. Black were to quit dentistry today he could live in comfort as long as he lived, no matter how long it would be.

I am just as sympathetic and just as willing to give for charitable purposes as any man, but I do not know that I am in favor of creating a fund for that purpose.

I want to devote a little time to a discussion of the oral hygiene movement. A great deal has been said. I wonder if we appreciate the magnitude and importance of this oral hygiene campaign that is being waged in this and other states today. I am assured that a great many dentists do not appreciate its full work and its importance. We have got to study this proposition not only as dentists, but as citizens. We have got to look at it from an economic and sociologic point of view, and if we will discuss this problem in this manner we will win the people of our state.

It is stated today that illiteracy is gradually on the decrease. Here in Illinois we only have of the children ten years of age and over 3.7 per cent that are illiterate. During the last ten years illiteracy has decreased in every state of the union with the exception of New York and Connecticut. Our public schools are doing a great work, and yet the number of dependent individuals in this country and in this state is gradually being increased. If you will take the pains to examine the annual statements of the distribution of public funds in Illinois you would be surprised, if you have not given it consideration, to know the large amount of money expended on our charitable and penal institutions. There are one hundred and fifty-one penal institutions in this state, to say nothing of the number of charitable institutions, all of which are fairly well filled and some are filled to overflowing.

At the last session of the legislature an appropriation was made for two hundred thousand dollars for the purpose of building a new insane asylum. Danville and Dixon want that institution, which is going to cost the taxpayers of the state, when it is equipped and completed, something like two millions of dollars if the project our legislators have in mind is carried out. Instead of spending money to maintain these institutions it would be much better if we could spend money to prevent the necessity of having such institutions. In other words, it is better to teach people to help themselves than to keep them on the charity list, and that is what we can do if we can give instruction along the lines of general health.

It is estimated that there are sixty thousand blind people in the United States today. A third of these are blind from a disease known as babies' sore eyes.

In Chicago during the month of November in two weeks time the Chicago health bulletin reported the deaths of forty-six children from diphtheria. Two or more weeks ago we all shuddered in reading of the great catastrophe on the sea, when sixteen hundred bodies were sent to the bottom of the Atlantic, and yet when we pick up the bulletin of the Chicago Health Department and read that since the pneumonia season set in last November three thousand souls have been claimed by that preventable disease, we read it and scarcely give it a thought. It is high time for some organization or some set of individuals to do something along this line. I am glad the Illinois State Dental Society is doing such noble work, but it is time for some organization or some individuals to direct the minds of the great masses of the people along the lines of health.

If there is one thing Dr. Corbett failed to mention in his address, although he mentioned it to me, it was the reorganization of the National Dental Association, and whether or not we should suggest that some action be taken in regard to it, but he evidently had reasons for leaving it out.

He has spoken of a great many things in his address, showing that he has had his ear to the ground. (Applause.)

Dr. Arthur D. Black, Chicago:

We have all enjoyed the address by Dr. Corbett; we are all interested in the most prominent feature of that address, namely, the matter of public education. I rather like the stand that has been taken by the trustees of the Forsyth Memorial in Boston on this question. As most of you know, there was set aside from the Forsyth estate two million dollars for the purpose of building and endowing a dental infirmary in Boston. The trustees of this fund have taken very advanced ground in the matter of the care of the teeth and the care of the general health. The Forsyth Memorial is not to be considered a charitable institution, but an institution established and endowed principally for the education not only of the people of Boston and vicinity, but of the people of the world, as to the attitude that the public should take in the matter of the care of the health of our children. They take the ground that it should be the duty of the public to take care of the physical development of our children just as much as it is to take care of their mental development. That is very advanced ground. It means that there is just as much reason why we should, from the public funds, care for the physical development of each child, as for its education; that from the public funds there would be supplied physicians and dentists to take proper care of the health of all of our children. It would be compulsory for children to be healthy, in so far as it would be possible to attain that end; just as it is now compulsory for each child to have a public school education. Would it not, in the long run, be a good economic proposition for our government? Out of ninety millions of people in this country we have three millions in our insane asylums, and the number is increasing. The cost of caring for these people is a tremendous item, and it would seem to be a very sensible thing to spend more money for prevention and lessen the number to be cared for in the future. We of the dental profession ought to do our proper share in the education of our people with this ultimate thought in view. Of course, that is far ahead of us now.

Let us turn for a moment to the other end of this proposition. Take our own children, if you like. Would not any one of us feel very much chagrined if we could not carry our children through to adult age without the loss of any of their teeth? Why can we not apply the same thing to other children? Is not that the object of the campaign of education, that we get hold of each individual child throughout the country? If we can educate the parents and if we can reach the children themselves, ought not each one of these children to be carried through to adult age with a good set of teeth, with a good healthy mouth, and with all that a good healthy mouth means to the general health of the individual? The work we have before us is tremendous, and yet it is not at all impossible.

As I stated at the meeting of this society a year ago, when this question was up for discussion, we ought to make a more serious study of the subject in our dental societies; we ought to pay more attention to the study of it among ourselves, so that we will know more about it before we say too much in the education of the public. While I do not depreciate at all the work that has been done on public education during this year, I am inclined to think the proportion of time and thought which has been given the two subjects is not right. While we have not done too much in the matter of public education, we have done too little in studying these questions among ourselves, so that we might know better what we are trying to do and what we may be able to do. I would like to see more study of this subject in our local societies, because that is where the best work can be done. As Dr. Buckley has suggested, each individual in each of our local societies can accomplish much in the education of the people who come into his office. I hope we will realize the possibilities of public education by each one of us in our own offices, and that we will, as occasion presents, talk to the children and their parents and teach them something of the relationship between healthy mouths and healthy bodies. These persons will become centers of distribution among their own acquaintances, and if we do this work as we ought, it would not take long to reach a good many thousand people personally, directly or secondarily. It behooves the members of our local dental societies to study the proposition more closely, so that we ourselves will know a little better what we ought to tell the people in these conversations.

There is one other phase of the President's address I wish to speak of very briefly. I wish to second what has been said by Dr. Buckley in connection with the proposed establishment of a fund to take care of those men who may need money later in life. I am very strongly of the belief that we ought to teach our younger men to lay up something for the time when they are going to need it rather than hang up a sign and tell them to be lazy now and we will take care of them when they get old. We ought to teach men to be frugal so that when they get old they will have something to live on, and that in order to do this it is very essential that they lay aside something while they are young.

Dr. J. W. Cormany, Mount Carroll:

I wish to say a few words in regard to the relief fund. These things never appeal to me, particularly of late years since I have learned the new ways of looking at things. It is a bad policy to say to the coming generation of dentists, go along, have a good time, join the Illinois State Dental Society, and at the close of your life, if you have not accumulated any money through your practice, you will be cared for. Relief funds are good. There are plenty of dentists over the United States who will come to the relief of any one of us should we be unfortunate to have both arms or both feet taken off. We will be cared for. I know the members of the Illinois State Dental Society would not want to see me go to the poor house if I should meet with an accident of that kind. These things are liable to happen to any of us, but away with the thought of accumulating a fund to take care of the dentist who is going to spend all of his money in riotous living.

Dr. J. M. Barcus, Carlinville:

I do not feel that I would be true to myself if I did not take issue with Dr. Cormany.

I was surprised the other day in talking to a banker who said, "I have made up my mind that the possession of money is largely accidental." He said to me, "Dr. Barcus, of course it is accidental, and if you ask any man who has money, if he is frank with you, he will tell you it is an accident." I do not believe I am looking to people to help me, but, gentlemen, I am looking to help somebody if they need it, and I am willing to do so. (Applause.) One of the greatest humiliations is to have to appeal for aid, and most men will only do it as a last resort, and it is nice for any man to think that his brother practitioners will help him if he needs their financial support. The national part of this relief fund does not appeal to me very much. It is too big, but there is a brotherhood of dentists in Illinois that should work for the possible material help of its membership. Many a man has made a good fight but has lost out. He was strong, but the elements were a little stronger than he was. He was willing, but he lacked tact, or the environment was against him, and he went down, and I shall work for this movement with all my energy and give it all the support that I possibly can. I want to see this thing taken up. If this society could make this relief fund effective it would be crowned with glory. I think some such movement should be undertaken by this society, and not necessarily as a national affair.

Yesterday I happened to see a copy of Dr. Corbett's address. I thought of a quotation I had read, and I knew right away where to find it.

Listen to the preacher: "I returned and saw under the sun that the race is not to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favor to men of skill; but time and chance happened to them all. We, then, that are strong ought to bear the burdens of the weak, and not to please ourselves. He cometh with benedictions."

If this feeling of philanthropy and love and brotherhood in this society could be established in the form of such a relief fund it would do a great deal of good. If one dollar per member was contributed to this relief fund it would mean about fifteen hundred dollars a year, and it could be well invested and bring in a good rate of interest. It would be a nice thing to help a brother who is unfortunate. The men who do not know the want of a dollar are not the ones to talk about it.

I would like to say to Dr. Gallie that I do not quite agree with his solution of the matter of the Italian children's teeth. It is a matter of the survival of the fittest. That is all. These mothers have ten or twelve children. Five or ten of them are cuffed and kicked and starved to death, and the rest that live you have got to look out for. They are pretty tough fellows.

Dr. Edmund Noyes, Chicago:

I think the President has done right in devoting so large a part of his address to the new duties and opportunities of the dental profession, and you will notice that four out of our eight remaining papers have a pretty direct relation to the same aspects of professional life and duty. It is always necessary when the profession is making a new departure of any sort that it should absorb time and attention in our meetings for a while. If you look back you will remember that the use of procelain had its supreme place in our thoughts and discussions for quite a time some years ago. It was right and necessary that it should. The cast inlay has had a similar absorbing interest for us, and it is right that now this new aspect of professional duty should receive attention that would be disproportionate if it were to be continued for too long a time.

There is one aspect of this matter that has not been alluded to which is to my mind important and very gratifying. If the dental profession are to follow the medical profession in the effort at prevention, to raise up a generation of children among our patients who shall be free from dental disease, instead of waiting for our duty in curing dental troubles, it will become indispensably necessary that the rank and file of our profession shall know more of the laws of life and the conditions of health than we have known in the past, and it will result in a very desirable and very important change of feeling and attitude on the part of dental students (and the dental profession, which has been responsible to a great degree for the feeling and attitude of dental students heretofore) in regard to the importance and value in the dental curriculum of the scientific side of education as compared with the technical side of it. I do not imagine the emphasis will ever diminish upon the technical part of dental education. The amount of care and training and skill a man must have in the use of his fingers and in the training of his eyes and hands for manipulative and technical work must never be diminished, but if we are to face this new line of responsibility and duty we have got to have proper training in what we might call the medical subjects of our education. We have to get past the time when our boys will shirk the chemistry, and shirk histology and physiology and be upheld in it by the sentiment of the dental profession outside, sometimes by the sentiment of the faculty as a whole body, dominated perhaps by the men who have charge of the technical training. We shall see a great improvement sooner or later in that respect.

There is one other thing that occurred to me in listening to the President's address that I wish to speak about. The number was mentioned of the children in certain schools which have been under close observation who have failed to make grades because of defective teeth. It occurs to me it would be very interesting, possibly it would be more convincing, if this statement were broadened a good deal, and we could have alongside of it a statement of the number of children who have failed to make grades because of some other reasons, that is, those who failed because they had scarlet fever, diphtheria, or measles; those who failed to pass because of bad living conditions in respect to food and ventilation and general conditions of health in their homes. If the numbers could be studied in respect to all these different lines it would be a far more convincing proposition than the one that is being put forward.

Dr. C. R. E. Koch, Chicago:

I have been greatly delighted with the President's magnificent address, and also at the very intelligent and thoughtful discussion that has taken place upon it. The utterance of bloated wealth, as represented by my friend Cormany, has suggested a little of my early experience during the reconstruction days in the south. A young confederate, who had returned disgusted with the prospects of life, indulged most of his time in the luxury of getting drunk. He was frequently up officially on account of drunkenness and misconduct, I occupying the position of magistrate at the time. I finally reasoned with him and said to him: "Why should you act like this? You are a member of a most distinguished family in the State of Mississippi, with all the prospects in the world before you. Why don't you gather yourself up, take better care of yourself, and make a man of yourself?" He said, "You are going to preach, are you? Talk about wealth, what does it amount to? Look about you. You can see what an appreciation God Almighty places upon wealth by the damn cusses he gives it to." (Laughter.) The force of the remark is in the application of it.

I want to consider for a brief time the suggestion of the relief fund, and I want to say right here that while my experience in life has taught me that charity is frequently needed, and that charity is always kind and never vaunteth itself, and all that sort of thing, charity may be misapplied, and I cannot see how it is possible to carry out an enterprise of this kind on any practical lines. (Applause.) We have tried all of these things. We have tried dental co-operative insurance and it failed. It failed for lack of support. Take this audience. Here is a class of men just at the beginning of life and another class on the shady side of life. The young men will say, "Why should we chip in and help these fellows who are about to give up very soon anyway?" That is one of the difficulties in the way. The other difficulty is in making it a national affair. Great Ceasar, the State of Illinois is big enough! We have got dentists enough in this state, if we want to start a thing of that kind, to administer it ourselves. There is no use in gathering money and scattering it all over this country.

Then I come to the proposition of my friend who entertained us a few moments ago, Dr. Barcus. He spoke of having a fund of fifteen hundred dollars if every member of this society chipped in a dollar a year. Now, fifteen hundred dollars invested at, say, five per cent, would only bring in seventy-five dollars a year. What amount of relief can you give for that? It is absurd. I am absolutely opposed to any proposition of that kind, but when I say that I am not opposed to members going down into their pockets whenever a brother has fallen by the wayside and needs our help and giving him some support.

There was one other subject the President mentioned in his address, and it might be considered in this connection, and that is he referred especially to the work which Dr. Taggart has done, and incidentally to that which Dr. Crouse has done. These two gentlemen are not in the limelight of being worshiped today, but they are in the limelight of being attacked most outrageously. Now is the time to exercise our charity right at home and to stand by our friends even if the whole world should assail them. (Applause.) We know what they have done for the dental profession. While Dr. Taggart may have been indiscreet in giving out his knowledge before it was time, and for that reason he is deprived of the fruition of his thought and labor. and his rights are being confiscated, that is no reason why we should not stand by him today. I am urged to say this, because within a week a committee of the national association, of which there are two members belonging to this society, has made a plea before the committee on patents in congress, which would put (if carried out to its logical conclusion) Dr. Taggart in the class of the Goodyear Dental Vulcanite Company and in the class of the International Tooth Crown Company of malodorous fame. I confess to you that my name was connected with that position unauthorized and without my knowledge, and my heart rebelled, and I want to ask and plead that this society commit itself to nothing, without thoroughly investigating and understanding the situation, that may in the least reflect upon the integrity and good name of Dr. William H. Taggart. (Applause.)

Dr. J. N. Crouse, Chicago:

I did not hear the President's address, but only heard the remarks that were made by Dr. Koch, and it is rather awkward for me to speak at this time. However, I am willing to respond to the call to say a few words.

I knew about this committee in Washington trying to have the patent laws changed. There is not a ghost of a chance of getting a change in the patent laws, and there is no need of it. This committee is urging some law which will prevent a process patent. If there is anyone who knows what a process patent is. I want him to describe it to me. I do not. There are artificial legs and artificial arms and eyes that are being worn by people all over the country through what is called a process patent. They could not get them manufactured without it.

The other question relates to Dr. Taggart. They call his a process patent. I have had committees from six or seven different societies waiting on me to get an explanation why I sustained the process patent, and in every case I asked them what a process patent was. I told them I did not know, and I could not find out, and I have not found anyone who could describe it.

Now, reference has been made in this discussion to Dr. Taggart. He is not here, but I wish he were here to listen to it. I want to say that Dr. Taggart will be in a position under the arrangements I have made to be independent financially, because every man practicing dentistry who is making inlays will have to come into that agreement and pay him fifteen dollars, and put ten dollars in the protective association, so that when they carry me out in a box with my feet up the Dental Protective Association will be on a permanent basis. That is my ambition, and that will be my monument.

The many slanderous things that have been said about me all over the country do not bother me a little bit. I have not stooped to answer them. I have gone on and done what I believed to be right. I think I have done the greatest thing for my profession that I have ever done or ever will do. I have fixed it so that Dr. Taggart can get his compensation and they cannot abuse us. I am not working for anybody outside of the Protective Association, because any dentist who is so small as not to pay ten dollars when he has received the benefit of my work for twenty-five years can stay out of the Protective Association. Every man who is making a bridge or a crown would be paying a royalty to these patent sharks but for my work. I say this publicly, not boastfully, and the fact that five out of every six dentists practicing dentistry today have not contributed to the Dental Protective Association, and have had the benefit of it for twenty years is sufficient for me to get up here and state what I have done. I have done this work because I could not help it. Somebody had to do it; we had to wind up these patent sharks, and I seemed to be in line where I had to do it. I have given to my profession for the last twenty years a service which I have been offered twenty thousand dollars a year for ten years to take charge of the patent business of manufacturing concerns, and I am saying this because I have the proofs to back me up—twenty thousand dollars a year to take charge of the patent business which I have given to my profession for twenty years without compensation. I am under obligations to no one, except the members of my profession for the good treatment they have given me. (Applause.)

Dr. C. N. Johnson, Chicago:

I want to refer briefly to the last subject that has been up for discussion and mentioned particularly by Dr. Koch.

He stated that an argument has been made by a committee of the National Dental Association before a committee in congress regarding process patents. The published report of that argument was the first intimation that I had in regard to it, although one of the members of that committee. I had received from Dr. Bryant, chairman of the committee, a letter some time since saying he was going to introduce a bill of that kind. I will say in this connection that I am in favor of that kind of legislation, although I differ with Dr. Crouse and some of my friends. But I with Dr. Koch wish to go on record as saying that we knew nothing about the argument until it was made. Dr. Bryant has subsequently stated that he was obliged to meet the legislative committee when notified, and of course it was impossible for him to consult with the other members of the committee as to the kind of argument he was to make.

Another matter has come up here that is of vital importance. I am not saying anything about the practicability of a relief fund, but I wish simply to refer to two things. Statements have been made here by magnificent men—and we have splendid men in this society—that are not borne out by experience. They have said that nobody need to suffer in our society; because its members will see to it that every man is made comfortable if he has misfortune and financial reverses. That is a very fine sentiment, but I have been familiar with some of these things. I have known personally of individuals who have needed aid, and that aid was generously given on the impulse of the moment and when that first aid was gone the man was in practically as bad a position as ever; and if there is any movement, Mr. President, that will make this a permanent affair, I will favor it. I do not know whether we can do it or not; but while the goodheartedness of our members is magnificent, you cannot expect them to watch and follow up these cases, and it has been the history of many of these instances that temporary aid was tendered very graciously, but nothing permanent was provided upon which to fall back. That is a feature I believe to be well worthy of consideration.

I differ somewhat with my friend Dr. Barcus, who said that wealth is accidental. I want to tell you, Mr. President and gentlemen, that I do not believe every dollar I have obtained has been obtained by accident. Not by any means. I can give you reasons why that money has been obtained. I can outline them and define them accurately. It is the most vivid thing in my mind today. It is the result of hard work. I do not believe the accumulation of wealth is chiefly a matter of accident.

The President has referred particularly to the educational movement that has been going on throughout the state. We will have a more detailed discussion of that matter in the other papers that are to be read before the society, but there is one feature I want to refer to. I am not the least bit alarmed about the education of the public. That movement is growing so rapidly that we could not stop it if we wanted to. It is in the air. It has taken hold of public sentiment, and when public sentiment is behind any movement it will be thoroughly ventilated. There is no alarm on my part about the fact that people are going to be educated as to the care of the teeth and their significance and all of that. I was never so hopeful of the future of the profession as now, and the benefit the profession is going to give the people. On the other hand, I was never so anxious in my life as to the future as I am today. I can look forward and see one of the greatest opportunities that the dental profession has ever had placed in jeopardy. The demand that is being created today for dental service is becoming so great that you and I have got to work harder than in the past if we are going to meet that demand There is a responsibility devolving upon the profession of this country today that is simply appalling, and you and I have got to wake up. People demand things of us, and if we do not meet that demand it is going to drag dentistry down deeper than it has ever done. What the profession must do, as Dr. Black has said, is to inform themselves as to the significance of the teeth in relation to the individual health and public health. They must not only do that, but prepare to take upon themselves community obligations, and it will take a long time for that to sink into the profession. Our relation to the community is becoming more acute every day, and every member of the profession owes a duty not only to his profession, but to the people. I leave this one thought with you, to study carefully into the relation of the profession to the community, and the obligation of the profession as a whole, not only to the profession itself, but to the community. We have a greater opportunity before us to place our profession upon an established basis than we have ever had before, and I hope our profession will rise up and become enthusiastic over this particular factor of the situation, and if the profession will meet the emergency we shall advance in the next few years and place dentistry in a light before the world that it has never yet occupied.

Dr. Corbett (closing the discussion):

I will only take a few moments of your time in closing. At the time I was writing that portion of my address which dealt with a relief fund I had in mind a case of one of our members in the city of Springfield who needed financial aid. It was sought from this society, but the response was very small, and after we had all left the convention and the men had gone to their homes the money that was collected only lasted a short time. I do not suppose one of the members of this society thought of the requirements of this man after they had reached their homes. I never heard what the results were or how this brother practitioner got along subsequently.

There is one thing that has brought to my mind vividly the possibility of misfortune. Dr. Goslee is not present for the reason that his assistant lost her mother on Sunday night and her father on Monday morning, and she has no relatives in Chicago.

This is a pitiable condition, and we do not know when misfortune is going to overtake us. There may be some of us here who are raising a family, and father and mother may be taken away and the children left in need of financial assistance for a number of years, and the question arises how to take care of them. If there was a permanent fund established the income from it would be advantageous to our families. If such a fund was established it could be retained in Illinois, and not turned over to the committee of the National Dental Association.

We must feel very proud as a society of having such a man as Dr. Crouse. I joined the Dental Protective Association when it was first organized, and I have felt ever since that it was one of the best things I ever did. The benefits from it have been a hundredfold as compared with the expense of membership. Dr. Crouse has saved the dental profession all over these United States millions of dollars in defeating unjust patents, and now when one of our members comes along and has a patent that is legitimate and offers to settle with members of the profession on such easy terms, as has been stated, as members of this society we ought to stand by both Drs. Crouse and Taggart.

COMBINED DISCUSSION OF DR. H. J. GOSLEE'S PAPER ON NEWER METHODS IN CROWN AND BRIDGE WORK* AND DR. P. A. PYPER'S PAPER ON ESTHETICS IN CROWN AND BRIDGE WORK.

DISCUSSION OF DR. PYPER'S PAPER.

BY DR. F. H. M'INTOSH, BLOOMINGTON.

The dentist has a difficult mission to perform. He must be counsellor, architect, contractor and builder of all his work. To be a counsellor he must be wise, having sufficient knowledge and experience to be able to say what is the best course to pursue. As an architect he must see in imagination the finished product before he places his fingers to the task. There are few things which *happen* in dentistry. Mechanical and artistic ability must be possessed by the operator or he can not serve humanity as he should. It is too often noticed that the mere mechanical composes the entire thought and effort of a dental operation. To place fillings that will preserve the teeth and give little trouble to the operator afterward seems to be the end and aim of many, not a thought being given to the artistic or the esthetic. Now it seems strange to me as I think about it that more has not been said or written upon this subject that Dr. Pyper has brought before us. I do not remember of even seeing the word "esthetic" for years in our dental journals until a recent number. To be able to perform an operation from a mechanical standpoint of course is the thing, for mechanics is the foundation of dentistry, but to perform the mechanical and include the esthetic is what is in our province to do. Sensibility of the beautiful is the light of the whole mind; without it we work in the dark, and therefore feebly and defectively. The supreme function of this sensibility is to develop, to educate, to chasten the highest faculties, our unselfish aspirations, our instinct of truth; in short, whatever the mental gift, to get from that gift the best fruit the possessor must be incited, upborne, enlightened and inspired by the ideal which burns as a flame in his mind, and throws thence its joyful light upon every blow of his hand. If there could be such a thing as an esthetic conscience cultivated it could find ample opportunity to exercise itself in many decisions that are made today as one attempts to place the teeth in a comfortable, durable and esthetic condition. I happen to know of the case that Dr. Pyper has described, and what he has said regarding it is not an idle dream. His clinic Friday morning will show that he was possessed of an ideal and was capable of carrying it out. To note what was performed in this mouth and considered good dentistry because it stayed in position and the patient was able to perform the function of mastication with the same, and to see the change that was made from glaring gold crowns to jacket porcelain crowns, and be scarcely able to detect where the real and artificial commenced and ended, it would certainly appeal to the artistic conscience of anyone if he had one.

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*Dr. Goslee's paper was published in the June Dental Review, page 549

The value of any one of the oral teeth can not be computed in dollars and cents and if a pulp dies a discolored tooth is the result if not removed in a proper manner, then adding to that mistake by a restoration that only makes a bad matter worse, the opportunity is presented to the porcelain worker or the porcelain or gold combination artist to remedy the defect in a way most pleasing and durable. Behind and within every one is immanent the creative power. Let us exercise it, for "'Tis the eternal law that first in beauty shall be first in might."

Dr. R. M. Pearce, Rock Island:

DISCUSSION OF DR. GOSLEE'S PAPER.

This paper is one more example of the untiring efforts of its author to give to the profession the results of his investigations and is no doubt the most descriptive and exhaustively written paper on the subject of casting up to the present time, and no one can fail to be benefited by its presentation.

I shall confine my discussion to a few of the points that appear to be at variance with my own views. As to the fact that as large cemental porcelain surface as is possible is desirable there can be no contention, but that the weakness of a soldered or direct cast attachment to a facing is due to the facing being set in a stiff, rigid manner I cannot agree, but it is attributable to the small surface or pin attachment and small body of porcelain in the facing. Reference is made to the cushion-like effect afforded by the adhesion of cement over the entire surface. The cushion-like effect of cement ceases when crystallization takes place (cushion like implies softness and elasticity.). In the boxing-up process much more strength could be obtained if the base of the tooth were square instead of rounded and even with the rounded base the etching by hydrofloric acid will afford a stronger union. Although by this casting process crown construction is reduced to a definite system which requires little time and is simplified, we must not imagine this method solves all our difficulties. It will require plenty of time and work if properly done. Removable bridges should be resorted to as suggested. In many cases better results are to be obtained by their use, especially where a very large bridge is required. Not forgetting to mention the advantages of the Swartz attachment in connection with those already mentioned in the paper.

First: The ease of cementing to place either attachment to the abutment at separate times not necessitating the cementing of both attachments at once.

Second: The doing away with the strain or tendency to tear apart at any point in the bridge.

Third: The only possible method of accurately placing a bridge where the abutments are much inclined towards each other.

Fourth: The preservation of the individual elasticity of each tooth in its socket and the accompanying comfort to the patient in doing away with the necessary rigid strain occurring in a fixed bridge.

DR. WILLIAM F. WHALEN, Peoria:

Mr. President and members of the Illinois State Dental Society: I had an idea I knew something about crown and bridge work and esthetic dentistry, but since listening to the admirable papers by the two essayists, I am not so sure now. I have had the opportunity of reading Dr. Pyper's paper, and relative to the restorations with porcelain, I think sufficient care has not been taken by the profession in the selection of the metal that they use for their dowels or posts. Many crowns are being used and base metal posts with casts for their attachments, and I think the profession, if they have not already reaped a whirlwind of mistakes, are due in a short time to reap them. My theory of making crowns has been to swage the caps over all porcelain crowns, preparing the root to avoid fracture by following the line of enamel and using a lingual reinforcement, not a band, and casting to that or baking to it as the case requires.

In the case of which Dr. Pyper spoke, a central incisor, badly broken down, the pulp in a healthy condition, my method would be to restore the tooth as conditions justified, and I judge from the case he cites I would do it with porcelain inlays.

In the use of jacket crowns, I believe, as in the use of all crowns, the teeth should first be treated. I do not believe that in the great majority of cases it is good practice for anybody to put any kind of a crown upon a vital tooth, particularly a porcelain jacket crown, because when trouble sets in it means a new crown over the tooth, because you cannot properly treat it without removing the crown upon it, which costs time and expense for the dentist, or if the patient has passed out of his hands it is an additional expense for the patient.

In regard to bridge work, much has been said since we have met here relative to mouth hygiene, and many words of caution have been uttered that we go slowly and cautiously in this matter lest we create a wave that will get beyond our control. While we are preaching oral hygiene, we are putting in the mouths of the people unhygienic work, and it behooves us to acquit ourselves in such a way that our work which we are inserting in the mouths of people can be kept in a clean and hygienic condition.

(DISCUSSION OF DR. GOSLEE'S PAPER.)

DR. M. L. HANAFORD, Rockford:

Dr. Goslee's paper is the utterance of an enthusiast—the beautiful diction, the gracefully flowing sentences are admirably adapted to carry conviction—indeed even one of those "prominent practitioners," who has seen "the pedestal upon which his cherished reputation has been built, crumble and totter in a day," would almost be led to kiss the hand that waves him to the discard.

One can but admire the enthusiasm of one who can say "practices and methods of long standing have been completely revolutionized and supplanted by the casting process" and "It is now generally conceded that the inlay affords a better, quicker, less painful and probably on the average, more permanent character of operation."

However, the essayist inadvertently casts a doubt on the virtues of the inlay when he says later, in describing the technique for adapting a base for a crown to a root end, that a piece of 38 gauge pure gold should first be burnished over it and later covered with casting wax, because "with any investment material now procurable, a closer fit to the root end will be thus obtained than from the moulding of the wax alone."

It has also been my experience that a cast backing or base for a porcelain tooth never seems to quite go to place, and apparently the inference is unavoidable that the same thing is true of cast fillings in many cases, I had almost said all cases. I am inclined to think the latter would be true in the case of those who, as the essayist says, "by a process of self analysis * * * recognize their own limitations * * *" and know that they are not of those "who attain to the very highest achievements in any mechanical pursuit."

This sounds as if I were arguing against the cast inlay does it not? Fàr be it from me to do so. I am only intimating that the essayist—and we all need to have weights tied to our coat-tails, for I verily believe that we (I said *we*) are going too fast—there comes a day of reckoning!

There can be no argument against the substitution of porcelain for gold, whenever consistent with strength, in the case of crown and bridge work, and the use of interchangeable teeth is to be commended.

For the six anterior teeth, however, I have never found the range of application so confidently spoken of by the essayist, and in spite of a lower efficiency in the matter of strength, have felt obliged to continue the use of the baked porcelain crown with soldered facing.

The essayist's treatment of bridge cases is, in the main, admirable. I can't help wishing, however, that he had not said what he did in commendation of the inlay anchorage for fixed bridges.

The smooth and confident way in which he says "It will undoubtedly serve the purpose as well and in some respects even better than a full crown, providing its adaptation and stability are insured, would deceive the very elect.

But is it not like saying that a wall would endure the strain put upon it, if only the *stability* was insured? The essayist, and every mechanic, knows that the weakest feature of fixed bridge work is the attachment to mobile abutments, and that nothing short of the greatest attainable strength is strong enough, and I submit that no inlay, however well seated even with one or more pins, is as strong as a crown that grasps the whole root from circumference to center.

So I urge any who have not tried it (as I have) not to be swept along by the eloquence of distinguished counsel, but rather leave inlay anchorages alone, or else use them on their worst enemy.

DISCUSSION OF DR. H. J. GOSLEE'S PAPER.

DR. J. P. LUTHRINGER:

In this new field of casting, which as the essayist declares, is still in its infancy, a field that has scarcely been scratched on the surface, and in which the possibilities seem illimitable, one is confronted, in attempting a discussion, with a lack of classified knowledge and facts; it has not as yet been reduced to a scientific basis; we are still in the groping, delving stages, and anything which is offered for our consideration and guidance is accorded a glad welcome.

Especially do we welcome methods and procedures from such an authoritative prosthodonist as our esteemed essayist, Dr. Goslee. This gentleman's writings always bear the text book's requirements of authority, lucidity, and painstaking devotion to detail. Given a number of enthusiastic, capable, earnest men of Dr. Goslee's penetrative insight, expert technique, inventive faculties;

and facile pen to properly and clearly record the workings of the fingers and mind, and in the next decade many new and startling methods of procedure and applications of the casting art will come to light.

Owing to the meager knowledge and experience in this connection, as hinted above, the discussion of this paper resolves itself into approval, and emphasizing some points. Amplification and elaboration at this time are scarcely possible to any considerable extent. One hesitates to add to a story unless he can draw from his own store of knowledge, and adding my mite in this instance must take the form of suggestions, which, while grounded on the paper itself, have little direct bearing on the modus operandi enunciated, yet are closely related to obtaining the results we seek.

While it is a comparatively simple matter to adapt wax perfectly to the outlines of a cavity, the veriest novice soon realizes the difficulties encountered in its use as an intermediary in adjusting a porcelain crown to a root end.

Dr. Goslee has, I believe, solved the problem simply in the use of a swaged or burnished base, provided, always, the operator appreciates that accuracy resides more in his painstaking manipulation than in the materials and process employed. As the essayist forcefully expresses it, "you cannot expect a machine to so readjust an dadapt itself as to correct the errors of your fingers and brain." Accuracy of results depends on a technique that is as near perfection as is possible to attain.

I note what the essayist says relative to employing a single dowel in an upper biscuspid. It is often desirable to employ a multiple dowel, and for its construction the writer has two methods. This is employed also in the second upper bicuspid, which, as you know, often has a divided canal. The first method, assuming the root has been properly prepared and the canals enlarged, is to cut two dowels a little longer than necessary, point and taper to fit canals. Insert the buccal dowel, bending lingually as to form a shoulder at a point just above the free margin of the root so it will project wholly within it, then bend the part which passes into the hole of the crown so the crown is in proper relation and alignment. Form a similar shoulder in the lingual dowel, if necessary, bringing the coronal portions into approximate contact: flatten the opposing surfaces, bring them into close contact and solder. A little soft wax or moldine placed at the entrance to the canals will hold the two parts in position in the root. They may be removed in proper relation by grasping with a strong pair of soldering pliers, or the use of a little softened hard wax and then invested and soldered.

The second method consists in cutting the wire a trifle longer than the combined length of the two dowels, pointing and tapering the ends to fit canals, then bending it over completely on itself at the proper point, grasping the coronal portion with a pair of strong pliers or vise, and then forming the shoulders. After bending the coronal portion till the crown is in proper alignment, the approximating surfaces are soldered together, trimmed to fit and cut off if necessary.

"More porcelain and less gold" is a slogan all will subscribe to, and let us hope, that in giving us the Goslee interchangeable crown and bridge tooth, the essayist in making a stride in this direction was shod with fifty-league boots. Let us conjure up other pleasant hopes in this connection, chief among which is suggested by Dr. Goslee's injunction to have a tray of sample molds to select a tooth for the case at hand.

Now if he will only devise some method of obtaining for us the color and shade we actually want we will rise up as one man and call him blessed. We'll do more than that, we'll place his name in the hall of fame.

One of the most unsatisfactory, nerve-racking, soul-destroying problems which harried us in the past, and drives us to distraction today is the one which relates to porcelain tooth shades. In my sixteen years' connection with dentistry, tooth manufacturers, with but a single exception, have made absolutely no advancement in simulating the shading and basic coloring of the natural teeth. The same shade guides that were in use when I began the study of dentistry are rendering their feeble service today; perhaps some improvements have been made in the mechanics of the guides themselves, but the shades are essentially the same. Those who have entered the manufacturing field meanwhile have exercised villainous conservatism in clinging to colorings we have been forced to accept in the past. In case of the single exception mentioned above we have one firm of manufacturers to thank for a tooth of lifelike appearance, simulating nature remarkably well in certain cases; but there is the trouble—there is only a limited number, of the many teeth in this guide, which are applicable to the mouths of human beings.

Where full upper and lower dentures are used in a mouth we get on fairly well with a selection from any of the guides, but when you attempt to supply a single crown in a setting of natural teeth the flood gates of disgust, and several other things, are opened. Just who is to be blamed the most I will not undertake to say, but I do know that in too many instances where a plaster model of the case is sent to a manufacturer or dealer you will get a tooth either too small, or, usually, much too large and of a shade that will produce sufficient contraction of the levator labii superioris alaeque nasi of the sphinx as to actually cause his immobile countenance to break forth into a smile; and it is by no means the smile of hope, but rather the smile of derision.

What those who fill orders for teeth do not seem to comprehend is that the basic, fundamental shade of the desired tooth is the "thing,"and not the general effect. General effects are at times desirable, but that problem is to be decided by the operator in his initial determination and selection, and never by the tooth counter man.

I appreciate the force of the idea that it takes a better man to refrain from fault-finding than it does to indulge in complaint, but, gentlemen, I believe in this matter, which so vitally concerns the rendering of satisfactory results to those who entrust themselves to our service, the complaint is warranted, timely and justifiable. Unless we render the best returns possible we are neither doing justice to ourselves nor our patrons.

As a palliative I am free to admit that when one considers the vast number of shades, sizes, molds and individual teeth required to be carried in stock it is only fair to assume the dealers do the best they can; but we have reached the exacting point where that is not good enough. We know what we want and we must have it, and we will get it. But, how?

Manufacturers are quoted as saying they will supply whatever there is a demand for. That idea is a good business policy. They say they will make necessary changes and give us what we want if only a considerable number of us will "Kick" and "Kick" hard enough. Taking my cue from this I have accordingly dwelt at length upon this troublesome phase of our lives in the hope that others will be aroused to action. It seems to me that those who are wise will also avail themselves of the cue and take a well aimed shot or two in the proper direction; those who are otherwise, will continue to use uncomplainingly what is served up to them.

Dr. G. H. Kopperl:

I will speak of a few things in which probably I differ from Dr. Goslee. We are told to insert a pin through the backing and notch the pin above the backing, and cast each one separately. I differ from him in that regard. It seems to me, if we cast over this pin it would give us a weak point from the fact that the solder would do the work much more effectively. If it were not weak, it would not be necessary to place a notch in the pin. I have used the Goslee teeth. A traveling man from the Consolidated Company came to my office one day and informed me that they were getting the teeth out, but that he had no samples as yet. I was using a similar form, which I showed to him, and it surprised him quite a little. When we find the right mouth, it is one of the greatest things we have given to us, and Dr. Goslee has struck the right principle when he boxes porcelain in place. It will give the strength necessary. Some concessions of strength must be made in obtaining the esthetic effect. There is a weakness in the frame of the bridge, and it is demonstrated when he tells us that we must use wire in these joints.

I am inclined to question casting in its effect from a molecular standpoint, and the metals used. We lose a certain amount of strength, but I have used these teeth with great satisfaction.

Dr. G. D. Sitherwood:

I have had quite a little experience in making cast crowns, porcelain crowns, and bridges, and there are a few things in Dr. Goslee's paper that I can commend. One thing especially where he spoke of casting single crowns and assembling by soldering. When the casting is large and not heavy enough it breaks down, because the gold is not as strong as when swaged and well soldered. The combination of swaging, casting, and soldering is unsurpassed for strength.

My friend from Rockford seems to have had some of the same difficulties I have had in connection with inlay abutments. I have not been very successful with a number of bridges with inlay abutments, notwithstanding I put the inlays in devitalized teeth with long pins.

About the Goslee teeth, I did not know about them, but I have used a good many diatoric teeth and pinless teeth, those crowns with a hole in them. Very frequently you can make excellent bridges in that way, but often there is not room enough. I have been more successful in making bridges in which I have used the ordinary porcelain facing with two small pins. With diatoric teeth, while they were very good for a year or two, I have had trouble because of their pulling out. They are easily replaced, but we like to make a bridge that will stay in place. I have made a great many porcelain crowns, using a narrow platinum band and soldering the porcelain facing to the platinum iridium dowel and cap. I began that work with the idea that it was unnecessary to solder the pins of the facing to the dowel, but I learned later that a firm base was much better to back porcelain on. I have been successful with the large number of crowns which I have made of that kind.

Dr. Pyper spoke about the esthetic effect of our porcelain work. If there is a band above the porcelain, how are you going to conceal it? We make porcelain work in order to conceal the gold or platinum foundation that is underneath.

Dr. A. V. Louderback:

There is a connecting link between the subject under discussion and the one that was discussed yesterday afternoon. It is the cleanliness of the bridge. Yesterday there were remarks made upon the bacteriology of the mouth and its relation to oral hygiene. This afternoon the discussion has been upon bridge work. I am interested in the discussion in regard to this phase of bridge work—whether or not it can be made hygienic; whether it is possible to construct bridges of such form and adaptation to the natural tissues that they can be kept clean and avoid germ-breeding places.

Dr. Dalbey (Lady Practitioner), Du Quoin:

I have in my mouth a four-tooth bridge of this construction with cast inlay abutments. The bridge is kept perfectly clean. I have exceptionally short teeth, and I would not have any other kind of a bridge if I could.

Dr. A. V. Louderback:

The lady has brought out a point that has been emphasized in my mind, namely, she is not aware that there is any uncleanliness about the bridge. Any number of bridges have been worn with entire satisfaction, but that does not demonstrate to us that there are no germ-breeding areas about a bridge that cannot possibly be avoided, which may be the cause of the arthritis of which we heard yesterday.

Dr. Pyper (closing the discussion on his part):

Yesterday one of the speakers quoted from an Englishman who was slamming it into us for making microbe boxes and all such things. What are we going to do? One gentleman wants to know if these bridges cannot be made hygienic. Can you keep your mouth hygienic? You do not do it, neither will you be able to keep bridged teeth hygienic unless you do lots of work on them. They should be replaced as near as nature provided for them originally and should be made as hygienic as possible. This holds good with regard to the constructing crowns and bridge work, and I do not think we should get scared about the pus micro-organisms that were thrown into us yesterday.

One doctor mentioned the fact that he would like to have a tooth devitalized before placing on a jacket crown, because of the liability of the pulp to die afterward. None have ever died under any I put on. The record of every man, as far as I know, seems to be about the same. That is not saying they will not die, but you have recourse to a small corundum wheel, making a cross insertion of the lingual side, and another small corundum wheel going through the thin wall where you would open lingually and treat the tooth and when finished cement a little gold inlay. It saves you work unless you want to do the work over for some other reason.

In regard to the shading which I mentioned as to uniformity n the tooth, I wish to say that I can take away the uniformity of color that is there and place on any color I so desire with a porcelain body. As I said, I use high fusing porcelain—twenty-five hundred and sixtydegrees, which has about the same melting or fusing point as the other. It makes no difference what the shade is when you start out when you do not havegray in the tooth. Lots of teeth have no gray. There is no use in forming a tooth with gray in it when you do not need it. It is the hardest color we have to harmonize.

In regard to Dr. Goslee's paper, he certainly has given us some excellent ideas. Dr. Goslee gets the esthetic effects in a different way. I get these effects with porcelain. We should all take notice of esthetics, discard disharmony, and make our art a pleasure both to ourselves and to our patients.

Dr. Goslee (closing the discussion):

I thought it was high time that this society should have had such a paper as that which has been presented by Dr. Pyper, calling our attention to the art or esthetic side of dentistry, and emphasizing the artistic possibilities which are within the reach of all of us. I wish to pay my tribute to him for his splendid paper.

In closing the discussion on my own paper, there are just a few points I want to make.

My dear friend, Dr. Hanaford, has displayed his usual conservatism, and I am glad he took that line of thought in questioning the advisability of using an inlay as an abutment piece or attachment for fixed bridge work. I am fearful of the fact that it is going to be abused, and I agree with him to this extent that we can use it where it should not be used, but I would not have him convey to you the idea that you should never use an inlay as an attachment for fixed bridge work. There are many instances where you cannot put a crown on a tooth, or where you do not want to, yet the inlay can be used as an attachment. I refer to the six anterior teeth, and mesial surfaces of first molars where bicuspids are missing. If the cavity is properly prepared and the inlay well adapted and securely anchored you have as good an attachment as if you crowned the tooth, and you are conserving the natural crown. Wherever it is desirable to conserve the natural crown of a tooth an inlay can be used successfully.

Dr. Luthringer spoke of two dowels in teeth. I rarely ever find it necessary to put two dowels in a tooth, even though it be a first bicuspid. The mechanical requirement of the dowel demands for the means of attachment for an artificial crown that the dowel extend or project into the tooth as far as the crown does beyond. I think ordinarily it is possible to get one dowel in a first bicuspid that far. The only class of cases where I would put in two dowels would be those that are badly broken down and decayed so much that the root will not engage its end in such a manner as to insure strength with one dowel. If I could get a band around the root and fit it well with a swaged disk and get one dowel as far as the crown would project beyond, that would be all I would want. There is this advantage in using one dowel. You save tooth structure. If you put in two dowels you weaken the tooth just that much.

The doctor spoke of my admitting that the attachment between the projecting end of the pin which holds this tooth and the cap which covers the root, both in bridge work and in casting, was an element of weakness because we must notch it. Notching gives greater strength in the attachment of the cast gold to the end of the pin. If you notch it you have mechanical union. I emphasized that for the purpose of bringing out the thought that we must insure strength. You must be certain of strength in the attachment of the cast metal and sustaining pin. I could not conceive of a much greater calamity to bridge work than to have had the sustaining pins break loose. There would be nothing to hold the tooth.

Dr. Sitherwood is correct when he makes the statement that rolled or drawn or hammered gold is stronger than cast gold. However, in the construction of much of our bridge work in days gone by you must not overlook the fact that by far the largest proportion of our work was done with solder, and I maintain now that cast bridge work, where the bases are cast separately and tacked together with solder, is stronger than soldered bridge work where the whole contour and form are obtained with solder which is more brittle.

I do not claim that my teeth, as suggested, are universally applicable. I offer you something that can be used wherever that one type of tooth is necessary. I do not believe it will be possible to find a type of porcelain tooth that will be universally applicable. I give you something that is more or less applicable to the anterior as well as posterior teeth. There are a certain class of cases where we would have to use thin facings. If there is anything I am very much concerned about and try hard to obtain in all of my bridge cases, it is that the bridge be made as nearly sanitary as it is possible for us to make it. That type of structure as applied to the upper jaw can be easily kept as clean as the natural teeth, and is much cleaner than the type where you have a shelf underneath between the occlusal surface and the gum and no interproximate space at all. With these large interproximate spaces in contact with the gum, you can put undressed silk floss from one end of the bridge to the other, and it would be possible to keep it clean, while with the former type of construction it would be impossible.

THE DENTAL REVIEW.

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EDITOR C. N. JOHNSON, M. A., L. D. S., D. D. S.

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THE NATIONAL DENTAL ASSOCIATION.

The coming meeting of the National Dental Association at Washington, should draw to it the representative men of the profession from all parts of the country. Questions of importance are to come up for consideration; questions which call for careful deliberation and which promise to affect very materially the future progress of the profession. The re-organization plan will be brought closer to a final issue, the proposed fund for aged and indigent dentists will be discussed, and the work of the publicity committee analyzed. It is well that all of these things should receive due deliberation in advance of the meeting so that the members may act intelligently when they are brought up for consideration.

We are convinced that the profession generally do not place a sufficient significance upon the value of the National Association. It is difficult in a country of such great distances to get together at one time a large and representative body of men, but if the profession realized the possibilities of the association and were loyal to it the attendance would be much greater than it is. And yet it is not attendance only that counts; it is the spirit which animates a meeting that tells more for advancement than mere numbers. Whether there are two hundred in attendance or ten hundred, the acts of the National in the eyes of the public at large are considered authoritative so far as dentistry in this country is concerned. It is rapidly becoming a fact that no movement of any magnitude can be carried on without organization, and recognizing this the people are beginning to look to organizations as their basis of authority. In this view of the case there is a larger responsibility resting on the members of the profession regarding their attitude to the National Dental Association than many of them seem to realize. If dentistry is to receive its full measure of recognition at the hands of the public then the National Dental Association must be kept up to a high order of efficiency, and there must be a renewed interest in its annual meetings.

Washington, of all cities of the union, is the most interesting not only in its present day importance to the nation, but also in its historic memories. It is a suitable place for the meeting of such an organization as the National Dental Association and we trust that there will be a large and representative attendance.

THE EDITOR'S DESK.

ANNOUNCEMENT.

The editor of this Journal has been accustomed for years to taking his readers with him on his annual vacations. It has become so much a matter of habit to him, and to his readers, that there seems no ready way out of it this year. This is particularly true in view of the fact that the vacation is to be somewhat more extended than usual, embracing as it will a trip across the continent to Vancouver, B. C., and from there to Australia and return. This sounds short and easy but a glance at the following itinerary will show that some traveling will be done and some experiences will probably develop. After sailing from Vancouver we call at beautiful Victoria; then on to Honolulu, then to the Figi Islands—sounds to me mighty savage-like and romantic—then to Auckland, New Zealand, and on to Sydney, Australia. From Sydney we go up to Brisbane, to attend the Third Australian Dental Congress, and after that we return to Sydney, then to Melbourne, then over into Tasmania—the Van Dieman's Land of convict memory—then sail for the south of New Zealand, up through the length of that wonderful land and catch our boat at Auckland for Vancouver. Here we go south down the coast to Seattle, Tacoma, Portland, San Francisco, Los Angeles, the Grand Canyon, and HOME, to Chicago.

A friend of mine in asking me to write up the trip for THE

DENTAL REVIEW, said: "Don't you make it any less than twelve chapters—we can stand the description of that kind of a trip for a year."

Well, I do not know. I can promise only one thing, and that is to do my best to give my readers something of an impression of the things I see and hear. My greatest wish is that I could take them all along with me personally on the trip—and then, I wouldn't have to write it up. My present plan is to have the first installment in the September number, and then after that if a reader does not care to be deluged with traveling yarns he must simply turn over the leaves that contain "The Editor's Desk."

PRACTICAL HINTS.

EDITED BY J. E. SCHAEFFER, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, THE DENTAL REVIEW, 55 State Street, Chicago, Ill.)

Making Use of an Old Burr:—The end half of a dull round burr may be squarely cut off with a carborundum stone in the engine or lathe, after which the burr may enjoy a new sphere of usefulness in removing old amalgam fillings.—*Arthur G. Smith, D. M. D., Peoria, Ill.*

To Quickly and Effectively Clean Cement Slab:—Immerse in water, preferably soapy, for a few minutes, and then rub over surface of glass slab, a piece of flat compressed pumice stone, when an absolutely clean surface will result.—*A. Dangar, Burne, Sydney, N. S. W. Australia.*

How to Frost Glass in Partitions:—To cloud glass for the purpose of protection as in a laboratory, make a saturated solution of Epsom Salts, with stale beer. Apply with brush to both sides of glass, when dry give both sides a coat of white or Damar varnish.—*Dr. Chas. H. Wackter, Girard, Ohio.*

Use Lavender Smelling Salts:—Keep in the operating room a large sized glass bottle with a wide neck and ground glass stopper; have this filled with Lavender Smelling Salts. In case any drug has been used, the odor of which is disagreeable, simply remove the stopper and the refreshing odor of the salts will, in a very few minutes have permeated the entire office room.—*Dr. W. T. Joslin, Minneapolis, Minn.*

Spool Silk Retainers:—On a table where there is cotton receiver take the same off and make a hole in the bottom, about one inch from open end, large enough for thread to go through. Take the spring out and cut off about one-third or enough so when the spool is in position it will not bind too hard. Assemble, place spring in first; then thread through hole, then place in spool, screw on cap and you have an ideal thread retainer.—*Frank A. Hoyt, Chicago, Ill.*

To Those Who Use the Gates-Glidden Drills:—There is much help found in dipping the points in Blacks 1, 2, 3, or even pure Carbolic—and carrying this small globule of medicament down into the canals. This is especially useful where there is some tenderness in the drilling of the canals, while cleansing them for temporary treatment. This also applies to the use of the Kerr Broaches or Detroit Canal Cleansers.—*J. E. S.*

Diseases of the Antrum:—The treatment is of two kinds —surgical and medicinal. In considering which method of treatment to follow three points must be observed. First—Is a diseased tooth the cause of the trouble, or is it entirely of nasal origin? Second—Is the infection of recent origin, resulting in an acute suppuration? Third—Is the infection of long standing and has it involved the mucous membrane lining the antrum? The following is the treatment for cases of dental origin: If a tooth has caused the trouble it is not always necessary to remove it. Frequently by treating the affected tooth and opening into the antrum and washing out the cavity, the case will yield readily. Many teeth have been needlessly sacrificed in the surgical treatment of diseases of the antrum, especially by general surgeons, while on the other hand, many antrums have become chronically diseased, a condition that might have been avoided and the case cured in its incipiency, had it not been for the conservativeness of dentists in their efforts to save the tooth. It should be remembered that important as every tooth is—a healthy antrum is of greater importance.—*Le Grand M. Cox, M. D., D. D. S., St. Louis.*

Treatment of an Alveolar Abscess:—Miss R., age 18 years, came to my office with toothache, from which she had suffered for the past four days. On examination, I found a large defective amalgam filling in the buccal surface of lower right second molar. There was much swelling, extending down the neck to the shoulder. There was an abscess the size of a quarter along the angle of the jaw, at any point of which it apparently could have been opened on the outside with an ordinary needle. There was little or no external circulation, and it seemed impossible to abort external pointing. I made an incision along roots, obtaining free hemorrhage with but slight indications of pus globules; then directed the application of hot Antiphlogistine poultices every four hours, and instructed the patient to take a copious dose of epsom salts. When she returned next day the external swelling was slightly reduced, and the line of demarcation of pus cavity opposite first and second molars was very pronounced. With a slight incision the pocket was emptied of about one ounce of thick purulent pus. I continued the application of Antiphlogistine for four days, washing out pus cavity with antiseptics, and in the meantime opening root canals. The swelling had now subsided, and at the end of ten days I filled the tooth, there being no further indication of inflammation.—*H. E. Fitch, D. D. S., Elmira, N. Y.*

Impacted Teeth:—In this whole question of pus infections there is no more serious consideration than impacted teeth, particularly the lower third molar.

In the process of mastication, particles of food are forced under the flap of gum tissues, which overlies the crown of the tooth on the disto-occlusal surface. A pocket is thus formed between the tooth and soft tissues. This pocket is an ideal place for bacteria to grow. If the organism is at all virulent a sharp inflammatory reaction occurs. If it is a staphylococcus infection suppuration occurs early. The pus gravitates and collects beneath the angle of the jaw. Such a condition presents two possible dangers. Pus may penetrate the deep cervical fascia and enter the mediastinum, terminating the life of the patient. Or, edema of the glottis may result from an interference of the return circulation by pressure. Edema of the glottis is always a grave condition.

In both instances the patient should be in bed, preferably in a hospital. The bowels should be freely opened by calomel, followed by a saline. The pocket behind the tooth should be thoroughly irrigated with a normal salt solution and disinfected by using a 25-per cent aqueous solution of tincture of iodine. Large hot moist dressings should be applied externally and changed at least every two hours. The pus when present must be evacuated. Every abscess should be opened as soon as a diagnosis of an abscess can be made. In opening these abscesses around the angle of the jaw, we elect the point indicated by palpation. If the abscess is high and can be reached from within the mouth, an intra-oral-incision is chosen. If, however, the pus has collected beneath and behind the angle, an incision from within the mouth is contra-indicated, and for two reasons: First, drainage is imperfect because of distance and direction. Second, too much tissue is opened up in making a deep incision from within the mouth to reach an abscess.—*F. B. Moorehead, M. D., D. D. S., Chicago.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of $2.00 an inch.]

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The National Association of Dental Faculties will meet at the New Willard Hotel, Washingto, D. C., on Friday and Saturday, September 6th and 7th. The Executive Committee will meet at nine oclock Friday morning, the general meeting opening at 10:00 o'clock, the same morning.

MONTANA STATE DENTAL SOCIETY.

At the meeting of the Montana State Dental Society held in Missoula, Montana, June 14-15, 1912, the following officers were elected: President, Dr. W. H. Barth of Great Falls, Montana; Secretary, Dr. T. T. Rider of Missoula, Montana. Dr. George W. Cook, of Chicago, gave clinics and lectures at the meeting. The next meeting is to be held at Butte, Montana, next June. W. H. Barth, *D. D. S.*

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The Thirtieth Annual Session of the National Association of Dental Examiners will be held at the New Willard Hotel, Washington, D. C., beginning Friday, September 6, 1912, at ten oclock, a. m., and continuing until adjourned. Delegates expecting to attend are advised to make reservation early on account of the meeting of the N. A. D. F. and N. D. A. T. A.

Broadbent, Secretary, 15 E. Washington Street, Chicago; Henry L. Turner, President, St. Louis, Mo.

RECENT PATENTS OF INTEREST TO DENTISTS.

1,016,128. Artificial tooth plate, Alonzo C. Buttmann, Grand View, Iowa.
1,016,555. Tooth, Loyd Davis, Nauvoo, Ill.
1,016,786. Dental swage, James B. Sedberry, Thompsons Station, Tenn.
1,016,456. Artificial tooth, George W. Todd, Omaha, Neb.
1,017,450. Blowpipe-carrier, George Nevergold, Jeanette, Pa.
1,018,340. Dental disk-holder, Jerry A. Prescott, Steele, N. D.
1,018,803. Anchoring device for teeth-fillings, Axel F. Anderberg, Pawtucket, R. I.
1,018,712. Dentists anvil, Louis F. Koehler, Chicago, Ill.
1,018,713. Dentists anvil, Louis F. Koehler, Chicago, Ill.
1,018,927. Tooth brush, Jules J. Sarrazin, New Orleans, La.
1,019,733. Means for protecting dental work, Addison R. De Pass, Columbia, S. C.
1,019,233. Manufacture of cased pins for artificial teeth, Herbert A. Edwards, London, England.
1,019,244. Ingot-mold, Emil Gathmann, New York, N. Y.
1,019,519. Apparatus for making backing for teeth. Oscar M. Polin, San Luis Obispo, Cal.
1,020,018. Detachable tooth brush, Alexander L. Bonin, Montreal, Quebec, Canada.
13,388. Reissue, cuspidor, Henry E. Weber, Canton, Ohio.
43,321. Design, tool hadle, Edmund D. Gilbert, Philadelphia, Pa.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

NATIONAL DENTAL ASSOCIATION.

The 1912 session of the National Dental Association will be held in Washington, D. C., September 10th to 13th, and all indications are favorable for this being the most important and successful meeting that this association has ever held.

The Local Committee of Arrangements has selected the New Willard as 'Headquarters Hotel,' and necessary accommodations for the meetings of the general sessions and sections, as well as the "all-day clinic" on the last day, are to be held in the commodious ball room on the eleventh floor of this hotel. This provides the ideal arrangements for a successful meeting. that is, all under one roof.

The re-organization proposition has been receiving most liberal support from the State Societies, which have met since the Cleveland meeting when a constitution, along the lines of the American Medical Association was tentatively adopted. This question will come up at this meeting for final action and every one interested in the perfecting of a representative National Dental Association should be present. You are respectfully requested to remember this meeting when making your vacation arrangements, as this presents an excellent opportunity to attend the meeting of the National Dental Association and visit our National Capitol.

The following are on the Literary Program for addresses, lectures and essays: Dr. Arthur R. Melendy (president's address), Drs. Newell S. Jenkins (Dresden, Germany), Harvey W. Wylie (M. D.), Leon S. Medalia (M. D.), F. E. Stewart (M. D.), C. V. Conzett, B. Holly Smith, M. L. Rhein, T. B. Hartzell, George E. Hunt, C. A. Hawley, George B. Harris, W. O. Hulick, M. C. Smith, C. M. McCauley, W. A. Lovett, Joseph Head, H. H. Johnson, J. F. Biddle and J. J. Moffitt. Have not been furnished with all the subjects of the above at this date, July 10th, and for that reason all have been omitted; however, all of those selected are men of recognized ability and they will cover the important subjects before our profession today.

The report from the chairman of the Clinic Committee is most encouraging for an interesting clinic. This will be classified so that a person interested in some particular subject may study this through its progressive steps.

Information regarding railroad rates may be secured from your local agent, as conditions vary in different sections of the country. Any agent will gladly furnish any information requested. Homer C. Brown, Recording Secretary, 185 East State Street, Columbus, Ohio.

NATIONAL DENTAL ASSOCIATION.

FROM THE LOCAL COMMITTEE OF ARRANGEMENTS.

The essential requisites necessary for a successful national convention are: Central location for place of meeting; hotel and publicity facilities; convenient and suitable accommodations for presenting program; and not the least important, iteresting and pleasant surroundings.

The National Dental Association meets alternately in the West, East and South. Washington is in the Southern Division and no southern city is so accessible to the different sections of our country as is the Naitonal Capital.

Washington supplies all of the requisites essential for this meeting and offers much more. A city that can easily handle the enormous crowds of visitors that throng the streets every four years at the Inauguration of the President of the United States, is patently equipped to care for, both in railroad and hotel accommodations, any special gathering at other times. Washington hotel men have become accustomed to quick expansion and contraction of business. The coming and departure of Congress, with the thousands dependent upon its sessions, and the large number of conventions, which have been coming to the city in recent years, have served to make irregularity in numbers at depots and hotels the regular thing. Two conventions of considerable proportions were recently held in a single hotel, with no confusion in session halls, banquets or accommodations.

As to publicity facilities, there is no greater news distributing center in the United States. Correspondents representing not only all of the daily newspapers of the country and many of the foreign journals have their offices in Washington, but even the technical and trade publications have their contributors and regular correspondents at the Capital.

Every patriotic American should be familiar with the National Capital, which now well merits the often-heard titles of 'The City Beautiful," and the "Paris of America." Besides the many public buildings, museums, libraries and parks, etc., the Government Departments hold thousands of features of interest to visitors.

Then there are many side trips of interest: Mt. Vernon, the home of Washington, is reached both by steamer and trolley; Alexandria, Cabin John Bridge, Arlington and Old Annapolis, the site of the United States Naval Academy, are easily accessible by trolley cars. To the last place and to Baltimore, there is a new line of heavy interurban electric cars.

It will well repay the members of the National Dental Association to linger a few days after the meeting, or to come a few days before and spend the time visiting Washington.

Information concerning railroad rates will appear later. John H. London, 926 Farragut Square, Chairman of Local Committee of Arrangements.

DENTAL COLLEGE COMMENCEMENTS.

LINCOLN DENTAL COLLEGE.

Graduates—E. C. Alldritt, C. E. Brown, G. M. Griess, G .A. Grubb, A. W. Luff, R. S. Sturdevant, R. D. Withers.

UNIVERSITY OF TENNESSEE—COLLEGE OF DENTISTRY.

Graduates—H. P. Balthrop, J. E. Davis, G. I. Freeland, J. E. Gordon, B. W. Law, H. C. Maxey, V. W. Montsinger, G. B. Odil, C. M. Pate, W. T. Roberts.

WASHINGTON UNIVERSITY DENTAL SCHOOL.

Graduates—G. F. Bellas, F. H. Bierbaum, F. J. Brockman, A. E. Davis, F. H. Foerster, L. V. Halbert, G. W. Henske, W. N. Holaday, F. J. Kahil, H. H. Karian, E. C. Kimbro, W. A. Kreutzer, E. W. Lacy, G. N. McDavid, N. L. McKee, N. H. Niedringhaus, O. E. Schaefer, W. H. Siefert, G. Sherman, W. B. Spotts, W. S. Thompson, F. J. Wild, Jr.

ST. LOUIS DENTAL COLLEGE.

Graduates—R. B. Barrowman, B. C. Boggs, W. J. Bray, C. S. Chas, G. A. Clark, H. L. Deibert, H. S. Ghio, W. Hudson, H. G. Luecke, F. D. McFarland, T. A. Monch, J. A. Montgomery, S. F. Montgomery, I. H. Myers, L. M. Oberndorfer, C. A. O'Brien, S. Ostfeld, H. L. Riggle, V. Ruester, L. F. Shea, C. A. Spoeneman, S. R. Tanner, W. D. Vail, R. B. Vaughn, F. J. Witbrodt, F. C. Zaugg.

COLORADO COLLEGE OF DENTAL SURGERY.

Graduates—J. W. Barnes, D. Bate, E. W. Boyens, W. H. Baker, R. E. Buvens, G. A. Bullard, A. B. Brusse, A. B. Buck, S. R. Beckley, D. L. Chamberlain, D. L. Cohen, W. H. Fluallen, E. T. Glessner, R. C. Greene, K. Henderson, D. B. Hill, R. V. Hogue, G. K. Inouye, E. R. Little, C. O. McMillan, H. R. Peterson, J. A. Rosenburg, L. Rubins, F. W. Reiter, S. F. Richards, I. Shapiro, J. H. Samuel, A. F. Templeton, M. H. Volk, C. H. Watson, A. O. Wilson, T. H. Wood.

VANDERBILT UNIVERSITY—DENTAL DEPARTMENT.

Graduates—D. B. Beattie, J. P. Bell, P. L. Berry, L. B. Brown, R. R. Byrnes, A. H. Carter, J. B. Cotten, J. R. Crockett, G. W. Finger, J. F. Gaines, G. Hudspeth, V. L. Izard, M. C. Izlar, C. O. Johnson, J. D. Johnston, J. W. Jones, W. D. Lanier, Jr., J. W. McCook, H. A. McDonald, T. C. McGee, F. B. McMullen; J. H. Meeks, J. E. McMurphy, H. C. McMurphy, O. A. Moore, D. B. Morrison, J. A. Mueller, J. C. Norwood, L. W. Ogle, F. F. Perry, G. C. Reynolds, D. E. Rogers, L. E. Shaw, J. T. Starnes, P. E. Tribble.

COLLEGE OF DENTISTRY, UNIVERSITY OF ILLINOIS.

Graduates—M. E. Allan, M. E. Asger, S. P. Ashley, G. G. Bicknell, E. H. Busta, E. B. Berry, A. F. Coltman, F. S. Comello, L. N. Daniels, H. S. Duetsch, E. Evanson, J. A. Flannery, I. U. Fried, B. D. Friedman, S. J. Z. Gantz, P. H. Goldstein, B. C. Higgins, S. H. Ito, B. A. Jordan, W. W. McCrillis, E. E. McDermott, H. J. Mann, R. Mann, O. P. Martin, A. C. Meyer, J. D. Palese, H. E. Patrous, E. A. Porath, S. H. Roberts, A. Roth, A. A. Shay, C. Slaman, C. W. Stuart, C. D. Tay, P. J. Teeling, J. Van der Ven.

UNIVERSITY OF PITTSBURGH—SCHOOL OF DENTISTRY.

Graduates—R. B. Black, C. C. Boarts, R. R. Bryen, P. N. Carlisle, S. E. Calhoun, J. A. Christy, W. M. Crumrine, A. C. Dryden, W. C. Feick, R. R. Feightner, W. A. Frederick, H. W. Gamble, J. D. Gernon, W. W. Hinchman,

S. O. Huffman, G. E. Hunker, C. M. Jameosn, J. V. Lindsey, M. R. Mandelstein, L. S. Markell, S. N. Markowitz, C. M. Morgan, H. A. McKenzie, W. C. Pidgeon, C. B. Pipes, B. W. Pollum, J. H. Prugh, Jr., C. B. Quailey, J. A. Reese, E. C. Shryock, C. G. Sorgen, T. J. Stockdale, J. A. Tibbott, R. C. Tinsley, R. B. Tinsley, F. D. Tyler, E. Weger.

OHIO COLLEGE OF DENTAL SURGERY.

Graduates—W. R. Anderson, M. L. Bayliss, A. E. Beckert, N. D. Blackmer, A. J. Blackwood, F. Blumenchein, T. J. Bonvillain, C. J. Broughton, J. W. Bushhorn, R. A. Caskey, C. E. Chapman, H. A. Clark, R. B. Clark, I. S. Crile, W. R. East, W. F. Everwine, C. E. Fisher, A. Hall, H. G. Hammat, R. C. Hoblitzell, L. H. Kamping, J. L. Kincaid, S. McCarry, H. W. MacMillan, E. L. Markley, A. P. Matthews, J. V. Maury, C. R. Parsons, C. F. Pope, C. E. Rardin, H. G. Roby, G. E. Russum, C. S. Schilling, E. J. Schilling, M. W. Scott, F. A. Shattuck, R. J Studer, J A. Stuntebeck, B. H. Talbut, B. I. Talbut, Z. H. Trowbridge, E. C. Watson, B. W. West.

INDIANA DENTAL COLLEGE.

Graduates—J. O. Blythe, R. R. Bradshaw, E. M. Bull, C. C. Briggs, C. H. Burnett, L. Carter, S. E. Davis, T. P. Donahue, M. C. Faust, L. E. Foster, W. L. Fraizer, W. W. Gochenour, V. C. Haskett, H. O. Hawley, A. L. Hickman, O. K. Hilty; H. E. Hinshaw, P. H. Hutchinson, C. O. Huston, E. B. Johnson, J. Jones. E. I. Kellams, F. A. Kennedy, L. I. Kercheval, O. V. Kingery, J. C. Lankford, R. W. Lytle, W. I. McCullough, F. A. Mosby, W. E. Newenschwander, H. H. Pearsey, G. J. Pell, W. C. Richardson, B. Riffle, C. Rivers, G. Rivers, R. C. Schuyler, G. J. Smith, O. E. Stone, W. E. Thornburg, J. E. Walker, J. C. Willis, F. T. Wilson, J. L. Wilson, O. E. Yater.

UNIVERSITY OF MICHIGAN, COLLEGE OF DENTAL SURGERY.

Graduates—P. R. Alexander, E. J. Andersen, F. M. Annis, H. S. Bailey, K. E. Berend, J. H. Birkett, K. E. Bliss, A. Bordato, W. N. Brewer, A. W. Bruce, C. J. Bullis, R. W. Burch, W. L. Burk, A. B. Carson, W. M. Coburn, F. B. Cooper, R. W. Cooper, G. W. Cooper, P. D. Cresny, C. V. Curdy, F. J. Dengler, J. . Denhart, S. F. Devereaux, J. M. Foley, W. S. Forth, P. A. Fowler, B. B. Frankel, A. J. Frydrycks, P. L. Gardner, F. L. Hardy, K. Kamitani, K. M. Khantamour, P. J. Kuebler, R. Leigh, H. V. Lilly, F. A. Limpert, J. H. Longe, A. A. Lopez, A. F. Lowry, N. O. Lynn, G. W. MacKay, P. E. Margeson, W. A. Matheson, W. S. Mathias, H. L. R. Mead, R. Miller, E. A. Morrison, A. J. Munson, M. D. Olcott, C. M. Orser, R. F. Phillips, H. J. Post, C. F. Pryor, A. E. Rasmussen, A. Rehag, C. S. Ruby, S. R. Ruthven, A. T. Rycroft, T. Scott, L. C. Shonerd, H. J. Sweet, A. M. Taylor, E. H. Taylor, A. H. Terrill, G. G. Thomas, H. C. Thomas, V. Thompson, F. L. Walter, W. D. White, W. H. Wott.

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PREVENTIVE TREATMENT OF PERIDENTAL DISEASE.*

ARTHUR D. BLACK, B. S., M. D., D. D. S., CHICAGO, ILL.

Important studies by members of both the medical and dental professions have recently called to our attention the role which local foci of irritation and infection play as direct etiological factors in the establishment of serious systemic derangements. During the past year several papers** have been presented before the Chicago Medical and Chicago Dental Societies, citing numerous cases in which chronic infections of the tonsils and soft tissues adjacent to the teeth have caused the involvement of other important tissues, and have, in a number of cases, resulted in the death of the individuals. One Chicago physician reported six cases of endocarditis from infections about the mouth, three of them pyorrhea alveolaris.† The treatment of peridental disease has, therefore, come to be a more important question than that of saving or losing a number of teeth, and calls for a more careful and thorough study of etiology and pathology.

If we are to judge from the literature of this subject as published in our dental journals, little progress has been made during the past twenty or more years. I have recently reviewed more than a hundred articles, and have been much impressed with the fact that the profession has paid very little attention to the etiology and pathology in the application of treatment. In less than a dozen of the articles reviewed is there any reference whatever to the initial lesions. Most articles which refer to local etiological symptoms, do little more than mention the fact that deposits of salivary and serumal calculus are present. A very few mention, in a more or less general way, that injuries or irritations of the gingivae from any cause whatever are also related to peridental disease. We have not learned to mentally assemble, in proper sequence, our knowledge of these conditions so that we recognize them as cause and effect. We have not formed the full pathological picture which we should have before us in applying treatment.

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*Read before Chicago Dental Society, April 16, 1912.

**Chronic Focal Infections and Their Etiologic Relations to Arthritis and Nephritis. Frank Billings, M. D., Illinois Medical Journal, Vol. 21, 1912, p. 261.

Chronic Oral Infections. Thomas L. Gilmer, M. D., D. D. S., Illinois Medical Journal, Vol. 21, 1912, p. 275.

Some notes on the Interpretation and Treatment of Certain Types of Infection, F. B. Moorehead, M. D., D. D. S. Dental Review, Vol. 26, 1912, p. 233.

†Edward C. Rosenow, M. D., Dental Review, Vol. 26, 1912, p. 293.

The physician who is most successful is generally the one who has in his mind the best picture of the particular disease, from its prodromal symptoms to the final sign in convalescence, including all of the possible variations from the ordinary course of the disease, because he will be able in his treament to anticipate and in many instances prevent serious complications. He should above all things else, be able to recognize the disease in its earliest stages and apply proper treament then. The tendency in medicine today is to the very early recognition of disease and the immediate use of abortive or preventive measures, as illustrated by the use of antitoxins in diptheria and typhoid, and serum therapy generally.

Our picture of the diseases of the peridental membrane seems not to include much of etiology and early pathology, or to have these very indistinctly, and your essayist believes this to be the reason why we have failed in our management of it. To be successful in our treatment of the diseases of the peridental membrane, it is as important that we recognize the initiatory symptoms as it is for the physician to make an early diagnosis in diptheria. Clinical observation compels us to concede that the only successful treatment must be preventive. To properly employ preventive treatment, we must know every possible detail of the etiology and early pathology. We must not only know these things, but we must recognize the regular sequence of changes which occur in the tissues. One of the most important facts to recognize is the line or the time in the sequence on the one side of which proper treatment may not only prevent the continuation of the disease, but also effect a restoration to normal of the tissues involved. This line is usually not difficult to draw. It is mainly a question of loss of attachment of the fibres of the peridental membrane to the cementum. While such a division would not be universally applicable, yet for the large majority of cases we would be justified in saying that treatment applied previous to the detachment of the fibres of the peridental membrane is truly preventive treatment, while that which is employed after detachment must be generally considered as palliative.

Practically all inflammations of the peridental membrane are naturally placed into two main groups; (1) those which have their origin in a pathological condition of the pulp, the first involvement of the peridental membrane being at the apex of the root; (2) those which begin as a gingivitis, the first involvement of the peridental membrane being at the gingival line of the tooth. Other than from occasional accidental causes, as, for example, an inflammation resulting from a hole drilled through the side of a root, peridental inflammations do not start elsewhere than at the end of the root or the gingival line. In this paper, consideration is confined to the group beginning at the gingival line.

It is your essayist's intention to present a purely clinical study of the conditions referred to as a basis for the employment of more rational preventive treatment. We should first of all recognize the fact that, no matter what the exciting cause, there must be first a gingivitis before it is possible to have an inflammation of the peridental membrane. This is a very simple statement, easily verified by clinical study, and yet appears to be not recognized; or if recognized, to be almost entirely ignored. I say it is either unrecognized or ignored for the reason that the large majority of cases of gingivitis can be cured by simple treatment and if this treatment were generally employed we would not have the enormous number that we now have of cases of incurable peridental inflammations.

By the foregoing statements this paper is limited to the causes of ginigvitis and its clinical pathology up to the time at which there is a detachment of the peridental membrane at the gingival line. While other etiological factors are recognized; we will further limit this paper to the consideration of three, (1) deposits of salivary calculus, (2) deposits of serumal calculus and (3) injuries to the gingivae, and particularly to the septal† tissue as a result of lack of contact or improper contact of teeth, and as a result of irritations caused by faulty margins of fillings and crowns. In view of the fact that a paper* on the deposits of calculus was read before this Society at its January meeting, I will refer only very briefly to a few very practical points in connection with the manner of these deposits and their treatment.

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†The term septal tissue is used in preference to interproximal gum septum.

*Deposits of Salivary Calculus, G. V. Black, Dental Review, Vol. 26, 1912, p. 337.

DEPOSITS OF SALIVARY CALCULUS.

Gingivitis due to deposits of salivary calculus is readily recognized. The paper just referred to gives us more definite knowledge than we formerly had of the nature of the deposit, which should be our guide in treatment. This knowledge compels us to rely principally on the patient himself for the successful control of the deposit and the prevention of the gingivitis. The deposit evidently occurs as the result of a lack of balance between the quantity of food taken into the system and the eliminative processes. It is clearly our duty to acquaint patients with this knowledge, also to suggest to them that other calculi, such as renal and gall stones, may be logically expected to be formed for the same reason.

Probably the most important facts are those which explain the manner of the deposit; the first deposit is soft and may be easily removed with a brush and plain water, but within about twenty-four hours it becomes so hard that no amount of scrubbing with a brush will remove it. This means that the dentist alone can not possibly prevent the progressive destruction of the soft tissues as a result of the gradual accumulation of this material. It means that the patient alone has two opportunities to prevent ginigivitis from this cause; first, by the reduction of the quantity of food eaten to reduce or control entirely the deposit; second, by the thorough brushing twice daily of those areas on the teeth where the deposit occurs. It has been sufficiently demonstrated that the patient can prevent the accumulation of the deposit, and many persons will do so when they have a clear understanding of these simple facts. The dentist should see such patients often enough to remove deposits which may have occured through errors in brushing, or neglect by the patient. There must be co-operation if success is to be attained.

DEPOSITS OF SERUMAL CALCULUS.

We find deposits of serumal calculus in two locations; (1) on the enamel under the free margin of the gum, without detachment of the fibres of the peridental membrane at the gingival line; (2) on the roots after the peridental membrane has been detached. So far as I can learn the exact etiology of the formation of these deposits is not fully made out. We know that they occur as a result of the inflammation of the overlying tissue, and it would seem logical to suppose that these deposits which occur on the enamel under the free margin of the gum are the result of a gingivitis due to local irritation, or possibly to systemic conditions. However, it often seems to occur without a noticeable previous inflammation of the overlying soft tissue. After a minute quantity is deposited, it causes, by the roughness of its surface, additional inflammation of the overlying tissue and this in turn results in accretions to the deposit. It seems reasonable to suppose that food habits in relation to elimination may in part at least account for these deposits. As a rule a very slight deposit is sufficient to cause a noticeable discoloration of the outer surface of the gingivae and a diagnosis should generally be made by a visual examination. This condition is not recognized as early nor as commonly as it should be, principally because too many of us have not formed the habit of looking for it in examining the mouths of our patients.

The treatment should consist of the thorough removal of the deposit before the inflammation has involved the attachment of the peridental membrane, and the polishing of the surfaces from which the deposit is removed. A very critical examination should be made to discover, if possible, a local irritation which might be the indirect cause of the deposit, and give it proper attention. A record should be made of the exact location of these deposits, and frequent subsequent examinations should be made to know whether or not there is a recurrence. The consideration of deposits apically of the gingival line is not within the limits of this paper.

INJURIES TO THE GINGIVAE AND SEPTAL TISSUE.

The group of injuries caused by lack of contact or by improper contact of teeth, to bad margins of fillings and crowns, and similar causes, seems to have a very indistinct and insignificant place in our picture of peridental disease, yet there is little question but that these are the real exciting causes of the very large majority of cases which we see today. I believe the records which I am collecting will justify the statement that not less than three-fourths of all cases of peridental disease among people who visit dentists with a fair degree of regularity, are the result of a lack of proper consideration for the gingivae in our operations. We will consider separately the most important of these conditions.

(1) Lack of contact. This may be due to the extraction of a tooth, allowing neighboring teeth to separate slightly; or to any ab-

normality in the occlusion. It may be due to an inflammation of the septal tissue which has forced the teeth apart. It is too often due to a failure by the dentist to build up a filling or crown to proper contour. Under any of these conditions, the septal tissue will be injured and inflammed as a result of food being forced between the teeth. This applies to slight spaces between the teeth; if there is a considerable space, so that food debris is not caught and held between the teeth, there will usually be no inflammation.

DESCRIPTION OF ILLUSTRATIONS ON COLORED PLATE.

The illustrations on the opposite page are as accurate reproductions as could be made of six cases, which serve to illustrate the gradual progress from a slight gingivitis, due to improper contact, to the irreparable loss of the attachment of the peridental membrane. This is the clinical picture of the progress of all such cases, and should emphasize the importance of treatment of gingivitis. These illustrations are made from plaster models of actual cases.

Fig. 1. A case in which there was a broad, flat contact between the lower first and second molars, which caused food debris to become wedged in between the teeth, resulting in a slight inflammation of the interproximal gum septum.

Fig. 2. A case in which the lower second bicuspid and first molar had moved together as a result of the loss of the distal surface of the bicuspid by caries. An amalgam filling was placed without any attempt at restoring the mesio-distal width of the interproximal space, leaving a very broad, flat contact, which caused food lodgment and inflammation of the septal tissue.

Fig. 3. A case in which the upper bicuspids had separated slightly, allowing food to pack between them and cause, first, a recession of the septum, later, a detachment of the fibres from the cementum on the distal surface of the first bicuspid.

Fig. 4. A case similar to Fig. 3, except that the fibres of the peridental membrane had been detached from the roots of both bicuspids and there was a pocket of considerable depth between the roots.

Fig. 5. A case in which a gold shell crown had been placed on the upper second bicuspid and amalgam fillings had been placed in the mesio-occlusal of the first molar and mesio-occlusal of the second molar, with no attempt to restore contacts. The occlusion was such that these teeth were held apart and the spaces were crowded full of food debris after each meal, resulting in the destruction of the gum septums between these teeth, and detachment of the fibres of the peridental membrane from the proximal surfaces of the roots.

Fig. 6. A case in which the condition shown in Fig. 1 had been neglected, resulting in the gradual destruction of the septal tissue and eventually the detachment of the peridental membrane almost to the apex of the distal root of the first molar.

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(2) Improper contact of teeth. Improper contacts are generally due (a) to atypical forms of the teeth, most often noticed in

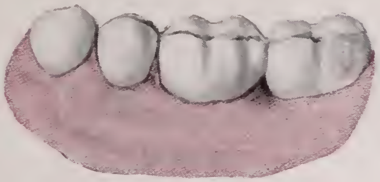


FIG. 1

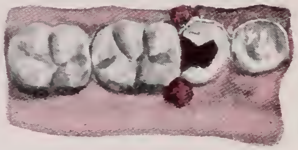


FIG. 2

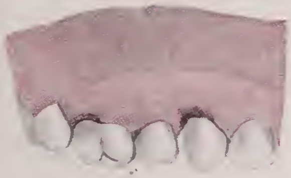


FIG. 3

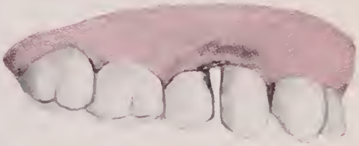


FIG. 4

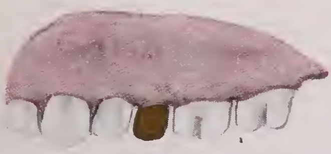


FIG. 5

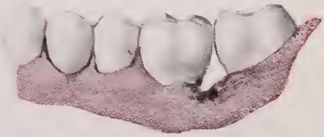


FIG. 6

the broad contacts between the first and second molars, (b) to malpositions of teeth, (c) to interproximal wear of the teeth of older persons (d) to separation under the stress of mastication of teeth that are at other times in proper contact, on account of laxity of the peridental membrane of one or both, (e) to fillings or crowns with a broad or rough surface in contact with the proximal tooth. In most cases these conditions cause food debris to be caught and held between the teeth resulting in serious injury to the septal tissue.

(3) Irritations caused by improperly finished margins of fillings or improperly fitted crowns. These constitute a very considerable percentage of cases.

(4) Injuries caused by misuse of tooth-pick, ligature, or too stiff a tooth brush, without regard to the condition of the contacts. Numerous cases are seen in which the crest of the septum has been absorbed as a result of the repeated forcing of a wooden tooth pick through the septal spaces from buccal to lingual. A ligature snapped frequently through a contact may cause a similar injury. I have noted but two cases in my own practice in which it seemed certain that an inflammation was caused by the use of too stiff a tooth brush.

DIAGNOSIS.

In the examinations of the mouths of our patients it would seem to be the most logical order to examine the soft tissues first This should include an inspection of the entire mucous membrane of the mouth, which can usually be made at a glance, followed by a more careful examination of the gingivae and interproximal gum septums. I have already referred to the deep red or bluish spots which indicate deposits of serumal calculus in the subingival space. When there is an inflammation of the septal tissue there may be considerable variation in the symptoms; the septal tissue may be of normal, or nearly normal, contour and the only symptom may be a slight discoloration. The most constant symptom is the discoloration. There may be slight or considerable swelling. The inflamed tissues will bleed freely on irritation. Oftentimes particles of food will be found packed in between the teeth and as a result the gum septum will be depressed in the centre and will be forced out to the buccal and lingual. After food impaction has continued for some time, the septum will undergo absorbtion. There is no limit to the extent of this absorbtion; the entire septal tissue may be destroyed, as may be also the peridental membrane and interproximal alveolar process

When there is the slightest discoloration of the septal tissue, an investigation should be made to find the cause. It will usually be found that the contact is not right. The condition of the contact can generally be determined by the use of a waxed silk ligature. The fingers which hold the ligature should be close to the teeth and care should be taken that it does not injure the gum septum if it snaps through the contact. If the contact is not sufficiently tight, the ligature will, of course, pass through easily, requiring very little force. If the surface of either tooth is rough, or if a filling is not properly finished, the ligature will usually be frayed or cut. If the contact is too broad, the ligature will drag as it is forced through. In testing contacts the ligature should be passed from occlusal to gingival and then the two ends should be held parallel in the direction of the long axis of the tooth; the distance between the parallel strands will indicate the bucco-lingual width of the contact. The two ends should then be held parallel in the buccal direction, at right angles to the long axis of the tooth; this will indicate the width of the contact in the occluso-gingival direction. In either direction the parallel strands should not be more than one and one-half to two millimeters apart.

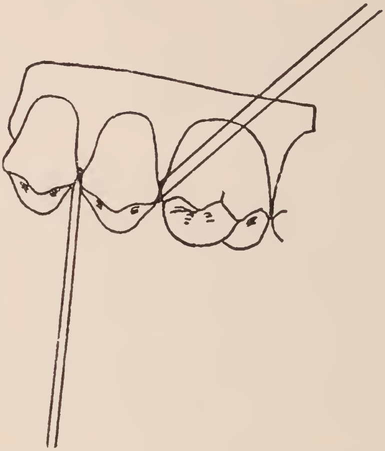


Fig. 7. In testing a contact the ligature should be first carried through from occlusal to gingival, then the two ends of the ligature should be held parallel in the occlusal direction, as shown between the two biscuspids; the distance between the strands will indicate the bucco-lingual width of the contact. The two ends should then be held parallel in the buccal direction, as shown between the second bicuspid and first molar; the distance between the strands will indicate the occluso-gingival width of the contact. In either position, if the parallel strands are more than from 1½ to 2 mm. apart, the contact is too broad.

Occasionally it will be necessary to place a separator and move the teeth apart a little to determine the exact condition of the proximal surfaces.

When there is an inflammation of the septal tissue and the contact is found to be in proper form, we should then suspect an injury by deposits of serumal calculus, or by the improper use of the tooth pick, ligature or brush. In the two cases mentioned in which too stiff brushes had been used, the contacts were in excellent condition, but almost every interproximal gum septum was very dark red. The gingivae to the buccal and labial of the teeth were not inflamed. I assumed that these patients, in using hard brushes, had kept them away from the soft tissues except as the septums would be reached in brushing the buccal and labial surfaces of the teeth. I selected softer brushes and directed them to brush the gums thoroughly, but not vigorously enough to be painful, and within a couple of weeks the inflammation had disappeared.

The symptom of pain or discomfort is a very uncertain one as related to inflammations of the gingivae, and especially to impaction of food between the teeth. Some patients will complain of so much discomfort and actual pain that they are unable to continue a meal until the impacted food has been removed, while others will present with a dozen or more spaces filled with food debris and will insist that they have not experienced the slightest discomfort.

THE PROGRESSIVE CHANGES IN THE TISSUES.

In the accompanying illustrations, the progressive changes in the tissues are shown. There are a number showing an initial gingivitis, the only symptom being a slight discoloration, or possibly a discoloration accompanied by swelling; others show the absorbtion of the septal tissue as a result of continued irritation; others the involvement and gradual destruction of the attachment of the peridental membrane. I have said that we have not recognized and associated these steps in the pathology in the application of treatment. If we had, we would have applied treatment before the peridental membrane became involved. Our neglect of these conditions is emphasized by the fact that the time which elapses from the original gingivitis to the destruction of the attachment of the peridental membrane is usually months, generally years, and yet the condition goes unheeded until detachment has occurred.

In order to collect data relative to this subject, I have for a number of years made definite records of the conditions found in the mouths of patients coming under my observation and have been surprised at the number of areas of gingivitis present in the mouths of most people. This study led to the development of a scheme for systematic examination and record of the exact conditions. In the accompanying illustrations, an examination card is shown, which has separate spaces to record the condition of each interproximal gum septum, also for the gingivae or peridental membrane to the lingual, buccal, mesial and distal of each root. Numbers are used to indicate the various conditions, such as gingivitis, recession, detachment, deposits, etc., also the various causes of these conditions.

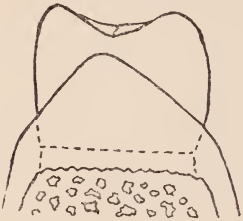


Fig. 8. Diagram illustrating the normal position of the interproximal gum sentum.

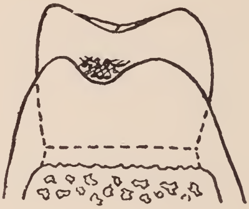


Fig. 9. Diagram illustrating slight injury to the interproximal gum septum by food forced between two proximal teeth.

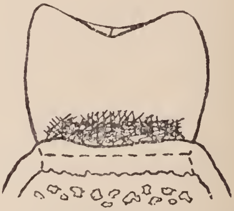
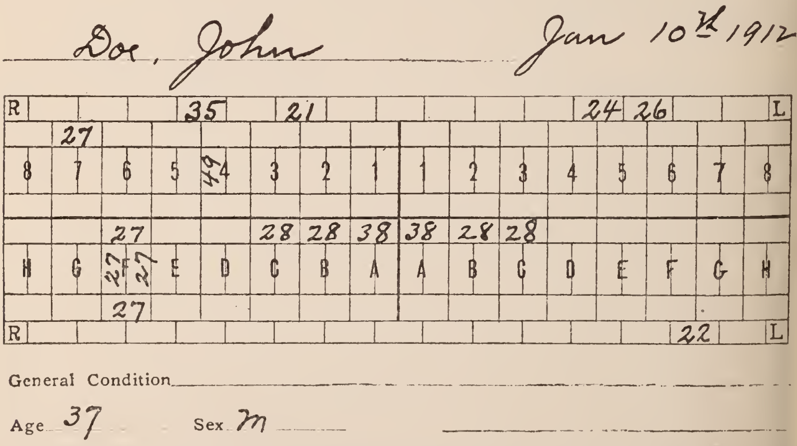


Fig. 10. Diagram illustrating the almost total destruction of the interproximal gum septum by food forced between two proximal teeth.



Doe, John Jan 10th 1912

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General Condition

Age 37 Sex M

Fig. 11. Card used in recording examinations of the soft tissues adjacent to the teeth. The figures represent the upper teeth on either side of the mouth: 1, central incisor; 2, lateral incisor; 3, cuspid, etc. The letters represent the lower teeth on either side. It will be noticed that there is a rectangular space on either side and one above and below each figure or letter; numbers may be placed in these spaces to

In connection with the preparation of this paper I requested a number of men to make similar examinations, in order that the findings presented would cover a larger number of persons and be made by enough men to substantiate my own previous findings. The following men have contributed records of such examinations and I wish to acknowledge their co-operation; Dr. H. E. Frissell, Pittsburg; Dr. H. M. Semans, Columbus, O.; Dr. Frank Rodgers, St. Louis; Dr. J. V. Conzett, Dubuqe, Ia.; Dr. Geo. T. Williams, Seattle;

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indicate the condition of the soft tissues on the mesial, buccal, distal and lingual sides of each tooth. There is another row of rectangular spaces at the top and one at the bottom of the diagram; these spaces are between the numbers or letters which represent the teeth, and may be used to record the condition of the interproximal gum septum (the septal tissue).

The numbers used in making the examinations are given below. These numbers are experimental and need revision before being used for permanent records. The conditions recorded in the illustration are as follows: On the upper right side of patient's mouth (left side of diagram), inflammation of septal tissue between lateral and cuspid, due to slight separation of these teeth, no caries of either tooth; recession of septal tissue between the bicuspids due to lack of contact of proximal filling, detachment of peridental membrane on distal surface of root of first bicuspid, with deposit of serumal calculus; inflammation of gingivae to buccal of second molar on account of a bad margin of a filling. On the upper left side; inflammation of septal tissue between bicuspids on account of proximal decay, inflammation of septal tissue between second bicuspid and first molar on account of proximal filling with too broad a contact. On the lower teeth; inflammation on account of deposits of salivary calculus to the lingual of the six front teeth, there is also recession of the gingivae about the two central incisors; inflammation all around the right first molar, caused by a bad margin of a crown; inflammation of the septal tissue between the left first and second molars due to too broad contact of these teeth, no caries.

List of numbers used to indicate the various conditions of the soft tissues adjacent to the teeth, and the conditions indicated by each.

16 No contact of teeth, no inflammation.
17 General Gingivitis, lack of care by patient.
18 General Gingivitis, failure of cleansing by mastication.
19 General Gingivitis, use of too stiff tooth brush.
20 Inflammation, improper use of tooth pick or ligature.
21 Inflammation, lack of contact of teeth, no caries.
22 Inflammation, improper contact or atypical form of teeth.
23 Inflammation, worn contacts.
24 Inflammation, caries of proximal surface
25 Inflammation, lack of contact of proximal filling or crown.
26 Inflammation, improper contact of proximal filling or crown.
27 Inflammation, improper margin of filling or crown.
28 Inflammation, salivary calculus deposits.
29 Inflammation, serumal calculus deposits.
30 Recession, improper use of tooth pick or ligature.
31 Recession, lack of contact of teeth, no caries.
32 Recession, improper contact or atypical form of teeth.
33 Recession, worn contacts.
34 Recession, caries of proximal surface.
35 Recession, lack of contact of proximal filling or crown.
36 Recession, improper contact of proximal filling or crown.
37 Recession, improper margin of filling or crown.
38 Recession, salivary calculus deposits.
39 Recession, serumal calculus deposits.
40 Recession of all gingivae, of old age.
41 Recession cause not apparent.
42 Loss in mesio-distal width of interproximal space.
43 Food lodgment in septal space.
44 Discharge of pus.
45 Lateral abscess.
46 Absorption of bone of alveolar process.
47 Detachment, no deposits.
48 Detachment, salivary calculus deposits.
49 Detachment, serumal calculus deposits.
50 Denudation of portion of root.

Dr. A. E. Converse, Springfield; Dr. Geo. McCann, Danville; Dr. M. R. Harned, Rockford; Dr. J. S. Reese, Bloomington; Dr. J. P. Buckley, Dr. E. D. Coolidge, Dr. P. G. Puterbaugh, Dr. A. G. Nauman, Dr. J. W. Birkland, Dr. E. S. Willard and Dr. G. B. Macfarlane of Chicago.

Altogether more than five hundred mouths have been examined on the plan mentioned. As it is my desire to keep your attention fixed as closely as possible to the possibilities of prevention, I will give statistics of those mouths only, in which no lesions, or at least very slight lesions of the peridental membrane were found. I would like to emphasize the fact that I have set aside the records of all mouths having pyorrhea, and will, therefore, present records of the examinations of the mouths of patients who have not pyorrhea. I have also eliminated the cards of all persons younger than 20 years or older than 35 years.

After tabulating all the data collected, the following is presented as a summary of conditions recorded. This covers 376 persons, ages from 20 to 35 years, inclusive, average age 26¼. Of the 376 there were but 19 in which no area of gingivitis was found, and of this 19 there were 5 who had open contacts, though no inflammation at the time of the examination. To state it differently, about 95% of all persons examined had at the time one or more areas of gingivitis; were started on the way toward peridental disease. Most of these mouths were in what would ordinarily be said to be good condition, except for carious cavities. There were but 7 marked for a general lack of cleanliness; 37 others were marked for lack of care of certain areas, these areas averaging about 4¼ teeth to the patient In the mouths of the 357 persons who had gingivitis, 3,050 areas o inflammation were noted, an average of over 8.5 per person. Is it any wonder that there are so many cases of serious disease of the peridental membrane when we find such conditions in the mouths o those people who are themselves taking reasonably good care o their teeth and who are supposedly receiving good dental service The 3,050 areas of inflammation may be classified as follows:

783 areas due to deposits of salivary calculus. These were in the mouths of 133 persons, and the deposits were on the variou surfaces of 660 different teeth. It will be noted that there were few instances in which more than one area about a single tooth wa recorded as being inflamed. This is an average of 5.8 areas per per

son, of those who had deposits, and an average of 5 teeth for each of these mouths. Of all persons included in the tabulations, this is an average of 2.08 areas per person.

447 areas associated with deposits of serumal calculus. These were in the mouths of 55 persons, and the deposits were on the various surfaces of 320 teeth. This is an average of 8 areas per person of those who had these deposits, or an average of 5.8 teeth for each of these mouths. Of all persons included in the tabulations, this is an average of 1.18 areas per person.

Of those having deposits of salivary or serumal calculus, 25 persons had both, making a total of 163 persons who had deposits of either kind or both. This leaves 213 of the total number examined who had no deposits.

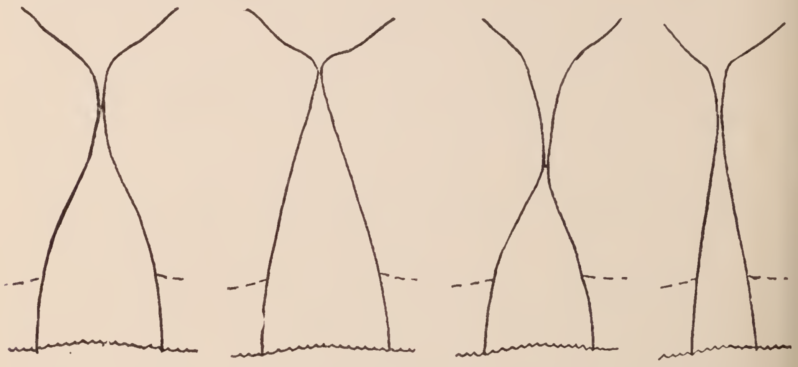
1,820 areas of inflammation due to other causes than calculus, subdivided as follows: 663 to bad margins of fillings or crowns, 421 to lack of contact of proximal fillings or crowns, 314 to improper contacts of proximal fillings or crowns, 180 to malposition or atypical forms of proximal surfaces of teeth, 174 to lack of contact of teeth having no decay of the proximal surfaces, 155 to caries of proximal surfaces and 13 to worn contacts. Of this total of 1,820, over seventy-six per cent, or 1,398, may be charged to lack of care or poor technic in operative procedures. A considerable portion of the remaining twenty-four per cent are cases which are generally neglected, such as those in which there is a gingivitis caused by improper contact or atypical forms of teeth which are not decayed, also many of those in which the teeth are not quite in contact and not decayed. I think we might reasonably charge very nearly 95% of all of this group of cases to lack of care or neglect on the part of the dentist.

For all persons included in the tabulations, there is an average of 4.84 areas of gingivitis due to improper contacts, bad margins, etc., per person. Please compare this with the average of 2.08 areas per person for salivary calculus and 1.18 areas per person for serumal deposits. It should be remembered that many of the areas of serumal deposit are due to the irritations of bad margins of fillings and bad contacts.

From similar tabulations made for a considerable number of older people, it may be stated that the average number of all the conditions is greater and the percentage of cases of detachment of the peridental membrane is very much greater for persons over 35 years of age.

TREATMENT.

The proper treatment of all of these cases is the establishment of conditions by which the continued irritation of the interproximal gum septum will be prevented. This means that we must finish fillings with smooth margins, maintain proper contacts, and maintain the full mesio-distal width of the interproximal space. The importance of preserving the full width of this space does not seem to be fully appreciated. Careful observation will show that there is normally a tolerably definite mesio-distal width of this space in relation to the length of the gum septum. The space must be of normal width to give proper support to the crest which is to withstand the pressure of food passing through the embrasures. It will be observed that the width of the space between the front teeth is considerably less in proportion to the length of the septum than between the back teeth. This is compensated for, however, by the incisal



Figs. 12, 13, 14 and 15. Good and bad forms of proximal contacts, buccal view. The proper position of the contact point for bicuspid and molar teeth is about as shown in Fig. 12, just a little to the gingival of the marginal ridges. The convexity of both surfaces at this point should generally change to a slight concavity in the gingival direction.

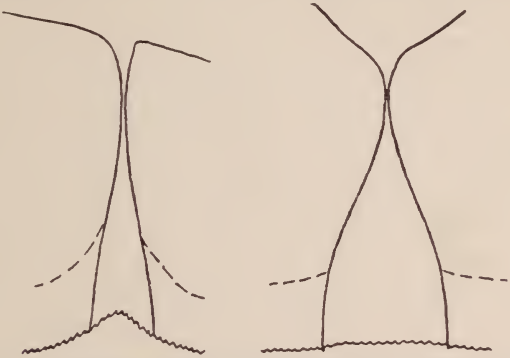
The position of the contact in Fig. 13 is too far occlusally. We cannot expect the gum septum to fill such a space unless it would extend beyond its normal length. With such a form of contact, less than the normal portion of food will pass through the embrasures, and the exposed portions of the proximal surfaces of the teeth will not be normally cleansed in mastication.

The position of the contact in Fig. 14 is too far gingivally. The long approaches from the occlusal invite the wedging of food between the teeth, with the danger of forcing the contact open.

The position of the contact in Fig. 15 is about right, but the teeth have not been separated to restore the normal mesio-distal width of the interproximal space. Compare the width of the alveolar septum with Fig. 12. There is in Fig. 15 only about half as much width of base mesio-distally to support the gum septum, consequently it will not be as healthy, nor remain as high.

curvature of the gingival line which very materially increases the support to the crest of the septum.

It is usually necessary to make a careful study of each case to determine the best procedures for the establishment and maintenance of proper contacts, which will include the modification of previous operations which do not meet the requiremnts. The following suggestions are made in the belief that they will cover the majority of cases:



Figs. 16 and 17. Comparison of anterior and posterior interproximal spaces, labial and buccal view. Attention is called to the width of these spaces at the alveolar border in relation to the distance to the contact point. It will be noticed that the base is much wider mesio-distally between the bicuspids and molars than between the incisors. This would seem to give the more support to the septal tissue between the back teeth. It should be remembered, however, that the line of attachment of the gingivae in the incisors is very convex, extending far toward the incisal on the proximal surfaces, thus compensating for the narrower alveolar base.

(1) When one or more contacts are found slightly open a little grinding of portions of the occlusal surfaces of the teeth in the immediate neighborhood will often result in the movement of the teeth to close the contacts.

should be placed and the filling trimmed to proper form. Crowns

(2) When there is too broad a contact of a filling, a separator other than gold shell crowns may be similarly trimmed.

(3) If there are proximal fillings which do not make contact, but are otherwise good, cavities may often be cut in such fillings and they may be built to proper form.

(4) Proximal fillings which cannot be brought to proper form by either of the above methods should be removed and replaced, whether or not they may be good fillings otherwise.

(5) If there is a slight opening of the contact between two teeth which have neither cavities nor fillings in the proximal sur-

faces, a cavity should be cut in one of these teeth and a filling placed to make a proper contact, if the contact can not be closed by some less radical procedure.

(6) It should be remembered that two or more contacts may often be tightened by the use of the separator and the building of one prominent contact. For example, if a case should present in which the contacts between the two bicuspids, between the second bicuspid and first molar, and between the first and second molars were slightly open, these might all be tightened by the placing of a mesio-occlusal filling in the first molar. It will not often be found necessary to cut a cavity in an undecayed tooth, as there will generally be a proximal filling in a neighboring tooth which may be modified.

(7) In placing proximal gold fillings, in practically every case slight separation should be secured, preferably by the use of a mechanical separator at the time of the operation, in order to gain space for the proper trimming and polishing of the contact.

(8) The gold forming the contact of gold fillings should be very thoroughly condensed to prevent the contact from wearing flat.

(9) In making gold inlays, either the entire inlay should be cast of an alloy which is considerably harder than cast pure gold, or else the contact should be of solder attached after the inlay is cast. Cast pure gold will not maintain proper contact form in many mouths, but will wear flat.

(10) In placing proximal amalgam fillings, a matrix and separator must both be used when the filling is placed and the separator must again be applied when the filling is polished at a subsequent sitting, if a proper contact is to be obtained.

(11) Care should be taken to have no overhang of any filling or inlay at the gingival margin. An overhang not only causes inflammation of the soft tissue, but weakens the support of the crest of the septum.

(12) In the preparation of roots for crowns, there should be the least possible injury to the attachment of the peridental membrane at the gingival line. We should determine with a flat, blunt end explorer the position of the gingival line all the way around the tooth, before cutting it down.

(13) If a band crown is to be used, care should be taken that

the band does not impinge on the peridental membrane at any point.

(14) Previously placed crowns which are causing or permitting inflammation of the surrounding soft tissues should be removed and replaced, if it is impossible to remedy them otherwise. In some cases cavities may be cut in crowns and fillings placed, or fillings in proximal teeth may be built out to make sufficiently good contact crowns.

(15) In a limited number of cases in which contacts can not be maintained on account of continual movement of one or both teeth, it will occasionally be the best treatment to extract one tooth in order to save the others. Such a condition most frequently presents between the upper second and third molars, the third molar gradually moving distally, or being sufficiently loose in its socket to permit movement under pressure. If the gum septum can not be otherwise protected from food lodgments, the best treatment is the extraction of the third molar.

In conclusion, may I make the suggestion that the dental profession is not so much in need today of more specialists in the treatment of pyorrhea as it is of more dentists who will make it their specialty to prevent disease of the tissues involved.

NON-COHESIVE GOLD FOIL AS A FILLING MATERIAL.*

BY DR. E. P. DAMERON.

There is an old saying that "there is nothing new under the sun," and it is certainly not my intention to make claim to newness or originality in the subject I am presenting for your consideration this evening. Indeed, it is so old and hackneyed that I present it with no little trepidation.

We have been admonished by some ancient soothsayer to hold fast to that which is good, so in accordance with that admonition I continue to use and advocate the use of non-cohesive gold foil in filling carious teeth where such a filling seems to me to be indicated.

Prior to the year 1854, when Arthur introduced cohesive gold foil to the dental profession, non-cohesive foil was the only obtainable form of gold for tooth filling purposes and the operators of that time were truly expert in its use, using it alone, or in combination with tin or platinum foil. These are in a majority of cases the fillings that your patient will tell you were put in by "old doctor so and so along about the time Noah left the ark"—at any rate, its durability and tooth preserving qualities are well established.

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*Read before the St. Louis Dental Society, March 5, 1912.

Non-cohesive gold foil does not differ in appearance from cohesive foil, and, according to C. N. Johnson, is prepared by exposing pure gold foil to the atmosphere for some length of time, or by bringing it in contact with certain gases, so that it gathers upon its surfaces an imperceptible film which, while not affecting the purity of the substance itself, interferes with its cohesion.

E. T. Darby states that cohesive foil is made non-cohesive by exposing it to the influence of ammonia gas—also that it is prepared by a thin film of iron beng deposited upon the surface of the leaf, basing this supposition upon the fact that when melted non-cohesive foil shows a reddish brown tint, while cohesive foil remains bright. Two layers of cohesive foil made non-cohesive by any of these methods may be rubbed together without adhering, and it is this non-adhering or "slipping" property that we must have to insure the desired working quality if it is to be inserted in the cavity by the wedging principle.

There are a number of "makes" of non-cohesive foil on the market, put up in book form, similar to cohesive foil, any of which is good. After securing the gold it is prepared for use by folding it into ribbons, and rolling into various sized cylinders by winding around a three-sided broach or cylinder-forming instrument.. It is well to make them in assorted lengths, as well as circumferences. The gold now being ready, let us take a look at the instruments required in its manipulation. Unfortunately the supply of instruments for this purpose is quite limited and the dentists of today do not practice the art of making them for themselves, though it is not a difficult task to perform in this case. A cylinder former, a tucking instrument or hand plugger, a wedging instrument, one or two foot pluggers, a straight plugger, a curved plugger for molars, a pair of good pliers—all non-serrated—being all that is required—six or seven instruments in all. The gold prepared and instruments ready, it is time to take a look at the cavity. Only cavities with complete and good surrounding walls are suitable for filling with this material, should one wall be missing a different procedure is indicated and that is another story, for we must have all the cavity walls present to wedge against, to retain the filling. Our operations then are confined to simple cavities, occlusal in bicuspids and molars and a majority of buccal, labial and lingual cavities. Think of filling gingival cavities with gold without applying the rubber dam—of filling with gold lingual cavities of upper incisors and laterals in the same manner in but fifteen or twenty minutes—large occlusal cavities—back even in the third molars in the same manner and time—no trouble at all to repair a hole in a gold crown, even though it be a bridge abutment—no dam, no damnation! Fill the cavity and send the sheriff after the money. Cavity preparation does not materially differ from that now in vogue for cohesive gold filling. The exception being that no convenience points are necessary for starting the filling and that the cavity margins should be left square as for amalgam—not beveled for the reason that the thin layer of gold covering the bevel being soft would soon wear away, leaving a gutter or groove around the filling, furnishing room and board for bacilli—maybe bacilli tuberculosis or even spiro-chetae pallida.

It is now time to insert the filling. Select a loosely rolled cylinder that will about fill the cavity and sufficiently long to project above its orifices. Place it in the cavity with one of its ends resting on the floor or pulpal wall, being sure that the cylinder's lamina extend from the floor to one or two millimeters above the orifice; do not lay the cylinder on its sides—always end up—then with a smooth foot plugger press the cylinder laterally against either mesial or distal wall; hold this with an instrument to prevent movement, set another in the same way and condense against the first; continue until one-half the cavity is filled; then begin at the opposite side of the cavity and repeat. As you approach the gold already in place, the size of the cylinders introduced must be smaller. When all the space is filled, take the sharp pointed wedging instrument, press it through the gold to the bottom of the cavity, with a rocking, prying motion forcing the gold against the cavity walls in all directions with considerable force. The space thus gained should be filled with a small tightly rolled cylinder. Continue this as long as it is possible to force in another cylinder, when no more space can be made, after testing thoroughly with the sharp pointed wedging instrument, condense thoroughly with smooth pluggers and firm malleting. The surplus gold is then partially trimmed away; condense again—trim and condense until the filling is brought to proper form.

Finish with a burnisher and you have a dense, beautiful filling. This technic is practically the same as that given by G. V. Black, except that he advises using a serrated plugger in condensing. In this particular it would seem to me that the serrations by cutting into the gold would prevent that "slipping" of the lamina of the cylinder as they are driven to place. In regard to non-cohesive gold, Black says:

"It is the general opinion of those who use much non-cohesive gold that water tight margins are more certainly made with it than with cohesive gold." This is certainly correct. It seems to have been the general opinion that, with the same care and skill, more gold could be put into a cavity of a given size, using non-cohesive gold, but careful measurements have not supported this proposition. It is a great loss to dentistry that we do not now make use of the plan of filling with non-cohesive gold; a plan that was general before the discovery of the cohesive property of gold, and still could be used to great advantage in certain cases.

Voltaire said "The secret of tiring is to say everything that can be said on the question." Like Tennyson's brook, I could go on forever, but will forbear and leave something for your imagination.

THE DENTIST.*

BY A. E. ROYCE, D. D. S., CHICAGO, ILL.

The most important subject before the dental profession today is the dentist, for upon him depends the whole future of the profession. As he rises in the estimation of the people, so the profession as a whole is placed upon a higher plane. As the standard of his education is advanced and his mind broadened so that he becomes more of a power, just so much the profession gains in the opinion of the community in which he as an individual resides. With this in mind I repeat that the most important subject before the dental profession today is the dentist. And what shall be the course of the special training he will have to undergo in order to best fit him to perform his part in the advancement of himself and the profession? Shall he be obliged to go to medical schools for the instruction required, or will a preliminary education of high school and university work, together with the course in our own dental colleges best equip him to gain skill and prominence in his life work? Now, I do not propose to give you a dissertation on dental education, but there has been so much agitation of late in regard to the necessity of a medical degree for the dentist, and even a question of enacting a law (as Virginia has) by which such a degree is made obligatory, that I feel impelled to present some of the undesirable features and some of the burdens such a law would entail upon the average dental student—those not possessed of a large amount of this world's goods, but who seek to equip themselves in the best possible manner without too great an outlay of time and money.

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*Read before the Odontological Society of Chicago, April 9, 1912.

There are two distinct sides to dentistry, the theoretical and the practical, and neither of them can be neglected. I need not go into history and tell you of the triumphs of the American dentist abroad, because of his dexterous fingers, but while finger skill is most important, he must now have more than that for the scope of dentistry has extended until a dentist must have a training in anatomy, chemistry, bacteriology, physiology, pathology, metallurgy, therapeutics, etc., etc., sufficiently broad so that he can with intelligence meet all the demands made upon his skill in the present day practice of his profession. Not only that, but he should also be so fitted for life that he may take a proper social position so that his influence in the community and as a citizen may be fitting to his high calling. I say "high calling," for I believe that proper care of the mouth and teeth is as important to the health and happiness of the human race as any other one thing.

The changes in the course of dental instruction that have taken place within the memory of those present have been very marked, and with increased knowledge of dental subjects and needs, there is a growing demand for a further step forward particularly where dentistry reaches over into the domain of medicine, and it is but natural the cry should go up that the medical degree is essential to the successful practice of dentistry. It is my observation (generally speaking) that the men who advocate the M. D. belittle the operative side of dentistry; it is not unusual to hear them say that any jeweler or watchmaker can do these operations, that it is purely mechanical and requires no particular knowledge except the ability to bore holes and fill them. Now, this class of labor, to do the mechanical work, can be employed very cheaply and with medical men at the head of the office to receive the patients and decide upon the operations to be performed, and incidentally pocket the money, it is easy to see how they could subordinate the dental profession until it would in time become one of the lost arts. This picture may seem overdrawn, but it is only a legitimate conclusion drawn from statements made by men advocating the necessity of the medical degree for the practice of dentistry.

The dental colleges seem always to be a mark for criticism, some of which no doubt is justified for the men at the head of our schools are only human and must learn by their mistakes, just as the rest of us do, but much that is said bears the marks of prejudice, if not malice. Our schools have come up from a small beginning, and in the face of much opposition from the physicians until they now stand accredited institutions in our country, and they deserve a great deal of credit for what they have done. They have always stood ready to advance the standard of education as fast as the requirements arose, and I believe it will not be many years before other cities than Boston will have their dental laboratories for technical and scientific research. At the present time our schools are preparing men for the general practice of dentistry just as the medical schools are fitting their students for the general practice of medicine; if either a physician or dentist desires to follow a specialty he must take special courses to fit himself for that work. It is not necessary for the general practitioner of medicine to be trained in dentistry, but it is necessary for him to be able and willing to recognize a condition in the mouth which should be referred to a dentist and upon which the future welfare of the patient may hinge; neither is it necessary for a dentist to be trained in medicine, but he should be able to treat the diseases that come within his province and also to recognize cases that should be sent to a physician. The physicians are coming more and more to appreciate the necessity of caring for the mouth and teeth because of their influence on the general health, but I believe today there is more harm done through ignorance of dentistry on the part of the general practitioner of medicine than because the dentist has not taken the medical degree.

A few years ago all the dental colleges connected with the Dental Faculties Association increased their course to four years in the endeavor to make the course more comprehensive, but the number of the students was very materially decreased and the fact that the colleges have now returned to the three years' course has been attributed to this reason.

The present campaign of educating the people to the necessity of dental work, and the proposed dental work in the schools, will increase the demand for the services of dentists and to meet this we must increase our student body rather than decrease it by making the course too long. It is freely stated that the dentists of Michigan, Indiana and Illinois could not, at the present time, properly take care of the teeth of the school children of Chicago. Our colleges will tell you that there is a constant demand being made upon them for dentists. Small towns write and ask that a dentist be sent to them, as the people are in need of his services, and there is none within ten, fifteen or twenty-five miles. This shows a scarcity of dentists throughout the country that is appalling.

Suppose we consider for a moment what the effect would be if the entrance requirements for our colleges were a full medical course. The best medical schools of the present day rquire two years' scientific work in a university, then the medical course of four years and the dental college would require two years more, making eight years of work after the young man left high school before he would be considered capable of conducting a dental practice. There are some very strong arguments against this, one of them being the impossibility of a student of, say, twenty-five years of age, to acquire the manual dexterity necessary to maintain the high operative standard of the past. It must be remembered that it is the finger skill of the American dentist that has given him his place in the world, and that skill should be maintained and guarded with the utmost care. Again, the shorter average life of the dentist proves it is more trying than any other profession. It is also less remunerative than most of the specialties of medicine. How many young men—graduate physicians—would pass by the advantages these specialties offer and take up the study of dentistry. Many of the young men who enter our dental schools have but limited means with which to acquire their education. This class of men are usually earnest, hard-working fellows who later in life are a credit to the profession. Is it not laying upon them a greater burden than is necessary to make the course eight years after high school? If the requirements for entrance to the dental schools is made equal to that of the best medical schools and that portion of medicine needed by the dentist in his practice is taught as thoroughly as it is in the medical schools, the dental graduate should be as well equipped for the practice of his profession as if he had taken a complete medical course; in fact, I have often thought the acquiring of medical knowledge induces a neglect of details that are essential to secure the best results in dental operations. One of the great difficulties found in all professional schools is that the students do not know how to study. I am told that since the medical schools have required two years in university their students study much more intelligently—they better appreciate the necessity and value of the subjects they are trying to master, and for that reason do far better work than when they went from high school into medical college. The same would prove true in our dental schools, our young men lack in concentration and application—they don't know how to study—but give them two years in a university and they will have not only the broadening effect of the university work, but they will bring an intelligence, earnestness and concentration to their work which will enable them to grasp the best that the college can offer them.

Thinking to find out how other dentists viewed this subject, I have had some correspondence with a number of the best men in the state, men who stand high in the dental societies and whose ideas are foremost for advancement in the profession; some of them also hold the degree of M. D. as well as D. D. S., and I am pleased to say their thought along this line is much the same as my own—all standing for higher education, and all thinking an eight-year course is longer than we should oblige our students to take. They all agree that the educational standard of our dental students should be raised, but that it should be a preliminary and university course rather than an obligatory medical course. It would be ideal to have an education in medicine and it would be ideal to be an expert surgeon and chemist and bacteriologist, but it is not practical—practically we must educate our students to be general practitioners and it is time the rank and file of the dentists roused themselves to the fact that the dental profession is likely to pass out of their control.

THE TECHNIQUE OF MAKING A PORCELAIN JACKET CROWN WITH PRESSURE.*

BY DR. J. O. EPPRIGHT, COLOGNE.

Take a separating disc and reduce the proximal surfaces to the gum line to form a shoulder, and with small stones cut the labial and lingual surfaces as much as necessary in order to form a continuous shoulder at the gum margin; then take a sharp round excavating burr and cut the shoulder on the labial surface as far as possible under the gum, but care should be taken that the alveolar process be not interfered with. Then, with a diamond trephine and small carborundum points, finish the shaping of the tooth, so that its shape will be conical. Take an impression cup, which may be made of thin brass, on a Sharp's crown machine punch, the size of the tooth to be crowned, fill with soft impression compound and force it well under the gum and allow to thoroughly harden. With a sharp instrument cut the excess of compound away. Take a small impression cup made of ordinary tin plate and make an impression, including the teeth on each side of the tooth to be crowned. Care should be taken, in removing this impression, not to injure the impression of the tooth to be jacketed. Fill the latter with a good hard cement, making the base of the model conical, and with a burr notch the cone; moisten with soapy water, mix more cement and fill the entire impression, making an exact model of the adjoining teeth. Then saw the impression nearly through, break it, and you have the model in three pieces. The model of the tooth is now free. Set the same in a swedger and swedge a platinum cap. I use the platinum foil which is specially prepared for inlay work. When you have the platinum cap swedged and trimmed, put your cement models together, take wax and make a model of the tooth to be crowned, and cast that either in tin or aluminum. Then fit it on the root of the tooth in the mouth and articulate. With tin foil enlarge the model about one-sixth of its own size. Make a mould of the tin model with cement, in a specially designed flask. Take this flask apart, trim the cement mould, and then, with a sharp burr, cut away the cement from the cutting edge of the tooth mould, leaving an opening through which the porcelain can be pressed home. The cement mould is now moistened sufficiently with soapy water, the flask put together with the tin model in position in the mould, and the model of the tooth is placed in the tin model which is in the mould Fill the rest of the flask with the cement, which holds the model of the tooth in proper position in the flask. The flask is now taken apart. It has three parts, two containing the mould of the tooth and the third the model of the tooth. Place the platinum cap previously swedged in position on the tooth, line the cement mould with platinum foil such as is used for making the cap for the tooth. The mould for the porcelain is now complete. Mix the porcelain to the consistency of putty and then, in order to obtain your proper shades, take a shade ring, match the color of the tooth as near as possible and take a thin carborundum disc and cut the tooth on the shade ring, lengthwise, in half; thus observing the different colors of the porcelain on the shade tooth. Place the porcelain in the mould according to the colors you find in your shade tooth. Now put the flask together and place it in a swedger specially designed for this purpose and press it home by screwing. By introducing, then, soft, unvulcanized rubber you press the porcelain home in the mould with the screw press. Remove the flask and put it on a charcoal fire and biscuit the porcelain. After taking the flask asunder, take out the porcelain crown which has been biscuited and trim off all excess of porcelain and place in an electric oven and fuse to the desired gloss.

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*Read before the American Dental Society of Europe, April, 1912.

SOME HINTS ON SUCCESSFUL BRIDGE-WORK FOR THE BEGINNER.*

BY DR. J. W. GALE, COLOGNE.

I have chosen this subject, some hints on successful bridge-work for the beginner, with some trepidation, because bridge-work has been so fully and ably written about by so many of our best writers and teachers that it seems like carrying coals to Newcastle for me to say anything on the subject, especially as I have absolutely nothing new to offer. My only excuse is, that possibly I may help some bewildered beginner who has come to the actual practice of his profession, as I did, so possessed with the ideal and artistic that he forgets the few points so really essential in the making of a successful bridge. I would not for a moment have him forget to make his work just as natural and artistic as he is able, but at the same time would have him make it a success, which, after all, is the important thing.

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*Read before the American Dental Society of Europe, April, 1912.

There is no operation in our profession requiring mature judgment more than simple bridge-work — mind, I do not say involved bridge-work. Now, good judgment comes largely from experience, which the beginner naturally cannot have; and I shall be gratified if what I say helps him in his work, and saves him from embarrassing failures and loss, and his patients from discomfort, discouragement, dissatisfaction and loss, as well.

How often do we hear our patients say: "No more bridge-work for me! Doctor Careless made one for me. He nearly killed me grinding the teeth and putting it in. And I suffered the tortures of the lost till Doctor Careful took it out. No; no more for me."

Now, the failure to give satisfaction and make the work a success came from overlooking or ignorance of one or more of the hints I shall try to make plain as I proceed. I do not even feel like excusing myself to the old bridge-workers present for what I am about to say, though I stand uncovered before them in respect and admiration for their ability. I am sure they have found out long ago more than I shall say, though they would, perhaps, have been grateful for such help at the beginning of their work, saving them from many trials and embarrassing failures.

The prime requisite for a successful bridge-worker, then, is good judgment. Good judgment comes by experience. The beginner cannot be expected to possess it in the highest degree, and until he does he had better be something of a pessimist rather than too much of an optimist. Now, if I may be allowed to speak directly to him, let me say:

Don't be afraid of knowing too much about the case before beginning your bridge. Take good impressions of the jaws and study the models therefrom. After studying the occlusion from the lingual aspect you may decide to make a plate instead. Note particularly the occlusion, the over-bite, if any, the position of the teeth to be used as supports for the bridge; the length and height or depth of space to be bridged. Don't cap exposed pulps in teeth used for bridge supports. Remove them. Don't temporize with pulps not in a state of perfect health in teeth used for bridge supports. No superstructure is stronger than its foundation. Don't, on the other hand, think you must kill every pulp you find in teeth to be used for bridge supports, or, for that matter, to be crowned. I have a bridge in my own mouth, made by Dr. Watson, in 1887, doing excellent service today, 25 years after. The pulps just as healthy, so far as I am able to judge, as the day the bridge was put in. It is right here where good judgment shows. The supporting teeth stand almost parallel and their crowns were not relatively large as compared with their necks, so that excessive grinding was not required.

Don't use diseased roots as bridge supports. Make them healthy or remove them, extending your bridge to a healthy support. However, teeth or roots loosened by incipient pyorrhea or faulty occlusion are helped by applying a bridge where it acts as a splint; provided they are properly treated prior and subsequent to the placing of the bridge.

Having decided that the case is a favorable one for a bridge, the most distressing part to the patient is the preparation of the teeth with living pulps for the abutments.

And here, of all places, if you are great — or think you are — be merciful. Don't use old stones out of true, clogged from grinding amalgam or gold fillings, and of an unsuitable grit, or too great in diameter, but one perfectly true, clean and of the proper grit — I prefer for most cases medium grit — and small diameter. The tendency is to use them too large.

Don't think a moist wheel is enough. A stream of water at blood heat should — must — be kept continually flooding the tooth to maintain, as nearly as possible, its normal temperature. Should the tooth be loose enough to make the wheel jump or pound, support the tooth with the finger or an instrument. Sometimes reversing the engine will obviate the difficulty.

These precautions taken, you will be surprised at the amount that can be removed without undue discomfort. The supersensitiveness of the dentin of many normal teeth with vital pulps does not come from the grinding, but from overheating the dentin from insufficient water or improper wheels. Don't grind too long without pausing. Give the tooth and the patient a chance to regain their normal temperature. Don't, in fitting the band, pass it beyond the point of greatest diameter, be that point where it may.

Don't impinge upon the aveloar process, or unduly crowd the gingival fold.

Don't fail, where the abutments have approximating teeth, to make the proper contact at the proper point. A separation or space between the end of a bridge and an adjoining tooth is as distressing as space between natural molars or bicuspids. Your supports ready, a very important thing is correct impressions. Select a proper tray, not too big. Don't be afraid of using too little impression material. Most beginners use too much. For nearly all bridges back of the cuspids very little gum is covered by the impression. I am not a stickler for any particular material, but for results — personally I use modeling composition — use that which gives you the best results. But if in doubt, use plaster. When the bridge supports stand much out of parallel, form a core between them of hard wax or modeling composition of such shape as to allow the impression to be removed without "dragging." After removing impression, take the core from between the bridge supports and accurately place it and the shells in the impression, tacking all securely to place with wax before pouring the model.

Mount all bridge case models in an anatomical articulator. Don't guess, but know that the articulation is correct before making the bridge. Construct the span with utmost care as to occlusion of grinding surfaces and impingement of facings on the gums. If the span is long, and you wish to obviate shrinkage, remove and solder the span separately, then replace and solder to abutments. Don't scrape from the models to allow closer contact of the facings, except at points visible in speaking or laughing.

Don't make the cusps on the bridge quite so deep as those on the natural teeth in the case. It puts too much lateral strain on the suporting teeth, and is apt to loosen them. Don't forget that the longer the bridge the shorter the cusps and the narrower the grinding surfaces, labio-lingually, provided the supports stand all on one side of the jaw — for example, from cuspid to third molar. Don't apply this rule, however, to single crowns. In this case, the support has only its normal work to do, while in that it is doubled or trebled.

Don't be afraid of putting a high polish on every point of the finished bridge,— but a word as to this later.

In setting the piece, equally important points are to be observed, if you would give the greatest comfort to the patient and usefulness to the bridge. Don't use excessive force in trying on the piece. Use your mouth mirror as well as both eyes and both hands. Be patient, and don't hurry. Many beginners, and patients, too, become frightened just at this point, and think the bridge a misfit. Reassure your patient by showing confidence in your work. The bridge finally to place, correct any fault in articulation, using articulating paper for accuracy. See that the gum is not pressed at any point, especially the gingival fold. A millimeter at least should be given between bridge and gum, except at visible points. Some space is necessary, as in many mouths there is a tendency of the gum to thicken under the bridge, and where no space is allowed the gum and gingival fold become tender and lacerated, causing bleeding and discomfort. Before setting the bridge, carefully round and polish all rough and angular places, especially about the supports. Don't be afraid of removing too much. Better two millimeters than contact.

Setting the bridge is always dreaded by the patient; many times from good cause; they or their friends have suffered dreadfully under it. Don't postpone setting the piece for a week or two. Two days are enough. Then the ground teeth have not had time to become supersensitive from shocks caused by thermal changes, which cannot well be avoided during this time. Much pain in setting comes from the gum, especially if it has been lacerated by grinding, or if the cement is too soft or too hard. To set a bridge with the least discomfort, after the teeth have been dried, touch any sensitive dentine with wood creosote. If extremely sensitive, with a solution of nitrate of silver. Then thoroughly dry again. Blanch the gingival fold with carbolic acid. Now fill the shells with a good cement, thoroughly mixed to the consistency of thick cream, and quickly press to place. Don't use the mallet, as cement before setting is very elastic. Thumbs and steady, hard pressure are best. Allow the patient, if he may be trusted, and the force can be applied in the right direction, to bite the bridge to place. Be sure the bridge is to place before the cement has hardened. After the cement has become hard — and this may be hastened by holding hot water in the mouth — carefully remove every crumb of excess cement, as great discomfort may be occasioned by the slightest bit remaining against the gum or under the gingival fold. The experienced bridge-worker holds the gingival fold in the highest respect.

FINALLY: Don't fail to give your bridge constant attention after it is in service. A bridge is not infallible or everlasting, any more than gold fillings or in-lays are. Each time your patient returns, thoroughly examine it. See that the gum is in perfect health. If not, make it so, removing the bridge if necessary — it is only a small operation — correct the fault and re-set.

After a longer (or shorter) time the cement may show a leakage. Don't temporize. Remove and re-set. Don't fail to fill at once any small hole in a cap caused by mastication or brushing. For such purpose gold is best; amalgam is good where its color is not objectionable. This takes but a few minutes, saving a possible toothache, even failure and hence dissatisfaction.

Don't send the patient away when he comes dissatisfied. Show your willingness to give satisfaction, even to the extent of making a new bridge, if necessary. Remember that ninety-nine times out of a hundred dissatisfaction follows discomfort. Don't allow it; get busy.

However, if the few hints I have tried to make plain be faithfully followed, you need not fear the results.

THE SUCCESSFUL DENTIST.*

BY I. B. CLENDENEN, D. D. S.

Mr. President, and Gentlemen of the West Suburban Dental Society:

My subject tonight will be, "The Successful Dentist." I have chosen it because it gives me a chance to speak of things which to my mind are being neglected by a great many of our brothers who wonder why they are not succeeding in this, their chosen profession, and if it fails to interest you, I will at least have profited by your kindness, as we all learn more from our failures than from our successes.

There is no vocation where so many things are contributory to the evolving of a successful career as in dentistry.

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*Read before the West Suburban Component of the Chicago Dental Society, April 12, 1912.

The dentist should be affable, conscientious, cleanly, a rare judge of human nature, and a thorough mechanic.

Some succeed without all of these qualifications, but they are the exceptions. We are living in an era of cleanliness — no longer can men expect to do business with dirt and filth on every side, because the public of today are demanding different surroundings than they did of our predecessors.

The first requisite is a scrupulously clean office. It may not contain expensive furniture and fixtures and all of the appointments of a luxurious establishment, but it can be kept clean.

Everything must be in its place and instruments kept thoroughly sterile. You may be sure that these things will be observed by the commonest of our clientele, and that the condition of your office will be heralded with great rapidity throughout the surrounding community.

And while we are dwelling on the condition of the office it might be an opportune time to suggest a correction of a few of the much too common errors.

Impression trays, while new, should be dipped in boiling, new wax. It acts as a sanitary covering for your tray, and may be removed after each individual case by slightly heating. It may then be sterilized and redipped. This procedure also aids in the removal of the impression from the tray, and you will not be obliged to resort to sleight of hand performances to keep a filthy tray from the sight of your patients and thus cover up a multitude of sins.

Use new wax for your bite, and, after using, destroy. It is a small item of expense and a crime to do otherwise. Keep a clean glass slab for use in medication. Pour on it what is necessary for the individual case and destroy the balance.

It is an every-day occurrence in a great many of the best offices to see the rubber dam carefully applied, the pulp chamber opened with its millions of bacteria, the broach used to clean the canals, and then travel back and forth from the filthy tooth to the more filthy bottle of medicine.

Do you suppose for one minute the patient is blind to all of this? And can you not see that such blunders will reap what they have sown?

If possible, abstain from the use of tobacco and alcoholic refreshments at least until your hours of work are over. No one, especially ladies, enjoys the odor of tobacco and boozy breaths.

Use good material and put forth your best efforts and charge accordingly, so that you may be well enough remunerated to put your soul into your work. Strive to better your mechnical ability as each day goes by, ever bearing in mind that there is only one legitimate way to increase your practice, no matter how many other superb qualifications you possess, and that is a satisfied patient made so by a perfectly completed piece of work. And don't forget, it acts in inverse ratio if the patient is dissatisfied. Let this be your daily motto, "To Satisfy." And if there be those who try your patience and nerves, don't lose your self-possession, for it is the greatest possession of all, and time will convince you that your faithful endeavors were not in vain.

It is poor economy for a busy dentist to be without the services of an office maid. It creates a good impression, especially among your lady patients. A maid should not be an office ornament, but an assistant. She may make appointments, answer telephone, keep your books, and get out your statements, and is also a great help in the laboratory and at the chair.

Care should be exercised in the handling of your patients. It is a bad idea to make too many appointments per day. Allow each patient time enough to accomplish something.

It is not a bad idea to talk good dentistry to your patients; for instance, a rubber denture may be replaced by a metal one if you will take the trouble to explain its virtues.

Keep all of your gold strips and sweepings, and some day the check from your refiner will surprise you.

Have the appearance of a busy man and be busy. Be on the job and remember that the patient with the two-dollar operation which you grab off on a dull day may be the means of getting a hundred-dollar one the next. Learn the business side of dentistry. Know what it costs to run your office per hour; then and not until then will you know what to charge for your services. Make your patients understand that your time is valuable. Where it is necessary to grant credit on payments, it may be well to hold your work somewhat in abeyance, thereby insuring proper returns for work as it is done. It saves worry and the sending out of statements and systematizes your work.

Be regular in sending your monthly statements, and follow them up. It is business-like to do so. When a patient has nerve enough to seek credit, then have nerve enough to make him pay up. You can create two reputations — one, "Go to Dr. Jones; he's easy"; and the other, "If you go to Dr. Jones, you'll have to pay."

Do your own collecting. You can if you have the grit. Remember, it is better to split a bill with the patient than the collector. Most of our fraternity seem to forget that the capacity of their earning powers is limited to comparatively few years. It then behooves us to lay aside a certain and stipulated percentage of our profits, and live within our means so that it may be done. At least twenty-five per cent. of the net income should be saved, and unless untold misfortunes be encountered it can be accomplished by most of us. It gives a feeling of security and a rating in the community to be thus fortified.

It enables one to make investments at opportune times which may prove exceedingly profitable. Don't forget that a savings account is poor security and that you can get municipal bonds in denominations of one hundred dollars and upwards, drawing from two to three per cent. more interest and usually negotiable and secure.

Beware of worthless securities which unreliable brokers are ever tendering professional men, because we are generally labeled suckers by these gentlemen.

These are some of the fundamental reasons why some fail and others succeed. Last, but not least, analyze yourself to find out your shortcomings and rectify them, and then you will be on the road to success.

I thank you for your courtesy.

REPORT OF COMMITTEE ON DENTAL ART AND INVENTION.*

DR. J. K. CONROY, BELLEVILLE, ILLINOIS.

To the Members of the Illinois State Dental Society:

During the past, as well as other years, it is always the aim of the manufacturers of dental supplies to use every endeavor to place on the market new and interesting appliances, and the past year is no exception.

A number of manufacturers have promised new articles, but at the last moment have reported their inability to send samples, and have promised to do so next year.

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*Read before the Illinois State Dental Society, May, 1912.

The following are presented for your consideration:

H. D. Justi & Son present a case of true-to-nature molds of artificial teeth, which are claimed to be nearer the perfection of the art than any that have heretofore been produced.

S. S. White Company present the following:

No. 1. Stretching and contouring pliers No. 138, designed by Dr. C. W. Benson, being a modification of the well-known Peeso, having the same long, powerful handles, with very short beaks, giving an enormous leverage. The modification consists merely in curving the narrow beak and finishing it with a ball end. The indentations made by the new pliers are rounded instead of long and narrow; you can make them shallow or deep, according to the force applied; can place them where you will, at either edge of the band or at any point of its body, can scatter them over the surface or run them into one another. You can thus contour any part of the band, one edge to fit the root, the other to fit the cusp piece, and swell out the middle to produce the barrel shape found in so many bicuspids and molars. They are made to stretch the metal, not merely bend it.

No. 2. Grunberg Blowpipe, designed by Dr. Josef Grunberg. This blowpipe will especially commend itself to orthodontists because of its smallness, its wide range of adjustability, and the exceeding fineness of its flame. It can be set by means of its jointed support at any angle, even to throwing the flame below the front of the work bench; and in whatever position it is adjusted it holds its place without the help of setscrew or lock. The heavy base prevents tipping or slipping, and both hands are free to manipulate and steady the work. The flame, which for its regular use is very small and very steady, may be enlarged as desired by a turn of the cocks, though it is not for large soldering work.

No. 3. Aseptic Waste Receptacle No. 6. The design is in very good taste; the glass body, being opaque, conceals the contents. The construction is very simple, being in two pieces. It is of sufficient weight to prevent its being easily upset when dragging the pliers to release the waste. The color of the cap is such as not to show the stain of iodine.

The cap, itself, while being celluloid, has been specially prepared, so that the celluloid will not shrink, as is usual with this material.

The receptacle and cap can be sterilized.

No. 4. Natural Form Molds in Porcelain Teeth. The distinctive features of these molds are the longer, flatter cusps, reducing the grinding necessary and providing for the correct contact of opposing planes as found in normal natural teeth in middle life and later. Properly articulated, they afford a freedom of movement of the mandible in mastication which greatly increases the efficiency of the teeth in the crushing of foods.

No. 5. Alexander's Plastic Inlay Gold. Alexander's Plastic Inlay Gold is a pure gold in a fibrous state, incorporated with a binder so that it can be manipulated in the fingers almost as readily as wax. It is pressed and packed into the cavity, and the binder is burned out, leaving a perfect model in the form of a porous mass, into the interstices of which a high-karat gold solder is flowed, making a solid inlay which fits the cavity perfectly.

No. 6. Cap-Crown Slitter No. 3. Invention of Dr. J. B. Monfort. A recent improvement in the blade of the Cap-Crown Slitter gives it a longer life and affords a means for securing it more firmly. The blade is now made flat and double-ended, and is held in the jaw of the appliance with two screws. An additional screw-hole lets the blade be moved up when worn, and also permits two positions when it is reversed.

No. 7. Horn Mallet; 2½ Inch Head. A nicely made small mallet for light work. Head of horn highly polished; 2½ inches long; face, ⅝ inch in diameter, with sharp peen. Handle of maple, 7 inches long.

No. 8. Napkin or Pinafore Holder, suggested by Dr. Robert Adams, Jr. This simple device is quickly applied, readily adjusted without inconvenience to the patient, and holds the napkin or pinafore easily in place. It is passed around the patient's neck and the end clips are caught in the napkin. The chain is of ample length (twelve inches). The links are so formed that they do not kink and are not likely to catch in the hair, and the clips are cross action. Easily sterilized.

No. 9. Improved Gas Inhaler No. 5. A recent improvement which is merely a modification of the celluloid hood and a change of the rubber face piece by which an instant adjustment with perfect fit to any face is secured. It fits itself to any face the moment you apply it, and so accurately that all air is shut off from the patient except that which is admitted through the openings for the purpose in the sliding tube of the inhaler body.

Another improvement is a lock to hold the inhaling valve wide open, when desired. When the sliding tube is pushed all the way in, turning it slightly to the right seats its guide pin in a notch, where it is held until released by turning the tube back.

The Improved Inhaler, known as No. 5, is thus made more effective and more convenient in use than the older form.

No. 10. Engine Mallet No. 3 (A). At the instance of a number of ardent admirers of Engine Mallet No. 3, it has been revived, with some important improvements, under the name of S. S. White Engine Mallet No. 3 A. The blow of the mallet is direct and is delivered only when the plugger point is held against the filling, which brings the head of the plunger into the path of the revolving hammer to receive its impact.

Either automatic or cone-socket points can be used. Made only for the S. W. White Belt Engine.

No. 11. Root Pliers No. 61. Designed by Dr. A. Brom Allen. These pliers are a sort of secondary forceps. In extractions loosened slivers of the root or bits of the alveolar process are likely to be left in the socket, which have to be probed for and lifted out. Pliers No. 61 were devised for this probing and lifting process, and they accomplish it perfectly. The beaks are like those of forceps, but narrower, permitting through their length and curve easy entrance into any socket. The conformation of the handles forbids their use in extracting firmly set roots, for which purpose they were never intended.

The handles are of the regular plier type, with ample spring. They have also a guide pin to assure accurate working, and a stop to prevent the spreading of the points under heavy pressure. They can be held like forceps, but operating them between the thumb and finger, as pliers are, gives greater control, because of the more delicate touch permitted. The finger grip is cross-filed and slightly concave.

No. 12. S. S. White "Full Cut" Plate Shears Nos. 8 and 9. These are two forms of "Full Cut" Plate Shears, alike except that the blades of No. 8 are straight, and those of No. 9 curved. They have this advantage: "They make a clean cut from heel to point, every part of the blades cutting equally well. Snipping with the points can be easily done."

The main advantage is, however, in the clean, smooth shear they make, enabling you to work more accurately, which is especially important to the crown-and-bridge worker, for whose use they are chiefly intended.

No. 13. Exact Dentimeter No. 2. Designed by Dr. Edward C. Kirk. The improved form of the Exact Dentimeter (solid steel with small octagon handle) affords several advantages. You have a better view of the work, you can twist the wire more readily and more accurately, and you can more easily sterilize the instrument. With it you can take an exact measurement of a tooth neck very quickly and surely.

No. 14. Clasp Gold Posts for the S. S. White Detached Post Crown. The clasp gold of which this post is made is a platinum gold alloy of great rigidity and tensile strength. The shape is that of the regular silver-platinum post, with all its advantages, the root end opposing its greatest strength to the heaviest strain, the crown end providing against endwise or rotary movement; both allowing ample and firm hold for the cement.

Gustav Scharmann presents a new hygienic dental head rest pad for use instead of napkins. They are made so a sheet can be torn off, leaving a clean one for each patient.

L. D. Caulk Company presents a new Synthetic Cement which your committee was unable to handle in the form suggested by the manufacturers, and your committee has requested same to be exhibited by the manufacturers at their exhibit.

Johnson & Lund present a new interchangeable facing, known as the Dimelow Interchangeable Facing. This facing is fastened to the backing by means of a staple which has been previously soldered to same. A sample six-tooth bridge is exhibited to show its practicability.

J. W. Ivory presents:

No. 1. A set of enamel cleavers of a new design, which are very powerful and effective. Set consists of four instruments, two right and two left.

No. 2. A new port polisher with wax carver and knife attachments, designed for purpose of trimming inlay models, and trimming fillings; a very neat instrument.

No. 3. A pair of cotton holders made to fit on either side of the jaw and engage cotton rolls. Instrument can be held by assistant or patient; very useful for setting crowns and treating pulp canals.

No. 4. A set of right and left molar clamps with a flange attachment designed to force cheek out of the way and give operator a much better view of tooth.

The Buffalo Dental Mfg. Company presents a No. 22*A* Donham Flask, heavier, larger and deeper than No. 22. New patterns throughout, with No. 2 self-centering space filler to adapt a single flask to the No. 2 Donham Spring. The self-centering space filler is of a new design, and, in addition to the self-centering space filler so constructed that it bears upon the outer edge of the flask, where the thrust of closing can be best withstood. The ordinary space filler puts the pressure directly against the unsupported center of the cover, causing it to sag and eventually break. Sample of No. 22 *A* Flask and No. 2 self-centering space filler submitted.

No. 2. Dr. H. A. Pullen's Expansion Arch Removing Plier. This plier is adapted especially for removing the expansion arch from the buccal tubes, an efficient and hygienic substitute for the thumb nail. The ends of the beaks are grooved transversely, so that the arch may be grasped by the grooves and easily and quickly removed. The plier may also be used for placing or removing retaining wires, or for bending the expansion arch. Sample submitted.

No. 3. Dr. H. A. Pullen's Band Removing Pliers for Orthodontia. This plier is especially designed for removing plain bands and clamp bands from molars and bicuspids. The beaks are formed in such a manner that the plier may be used with equal advantage upon either upper or lower molars or bicuspids. If desired, a small ball of tin may be soldered to the end of the long curved beak, so that a softer contact against the cusps of the teeth may be secured. Sample submitted.

No. 4. No. 4 C Combined Blowpipe and Bunsen. The blowpipe head is fitted to the bunsen by a taper joint, and is ready for instant use by keeping the air tube of the head connected to the bellows. It can be turned in any direction to bring the flame to the desired location. A swivel at the base affords a wide range of adjustment in position, so both appliances become practically universal in their scope.

The blowpipe flame is of the kind which can be operated with a blast from the mouth, a foot blower, or compressed air, as preferred, and will give good results under all conditions. A very fine needle point flame is readily produced with a light blast, or plenty of gas and a heavy blast will give a large and powerful brush flame.

The bunsen is provided with a threaded air shutter, which is capable of much closer adjustment than the slide commonly used, and is not likely to be accidentally thrown out of adjustment. Illuminating gas only. Sample submitted.

No. 5. No. 4 *B* Orthodontia Soldering Stand. Suggestion of Dr. Herbert A. Pullen. The No. 4 *B* Soldering Stand assembles the No. 4 Herapath Blowpipe and No. 122 Asbestos Soldering Block on a substantial iron stand, in convenient form for soldering orthodontia appliances upon casts. The following advantages are apparent in this combinaton: By means of the swivel joints of the blowpipe, the flame may be directed upon any portion of the inside circumference of the soldering block, and fixed at any desired position. Both hands of the operator are left free to pick up solder and adjust the parts of the appliance, while the flame of the blowpipe is held stationary in the position required. The soldering block may be rotated on the stand to change the position of the cast, as found necessary during the progress of the work. There is no necessity of touching the heated cast.

The position of the blowpipe is under such perfect control that the direction of the flame may be changed from left to right, up or down, onto or away from the work, by a slight touch of the finger. The flame produced is that fine needle point so necessary in orthodontia soldering, but the range of the blowpipe includes also a powerful brush flame. The stand supporting block and blowpipe is a substantial, japanned iron casting, of sufficient weight to hold the whole rigidly in position. Sample submitted.

In conclusion, I wish to state that I have taken for granted the description of the various articles submitted, as many of them are as new to me as they are to you, and it would be impossible for me to give my own opinion without having the use of these articles.

REPORT OF COMMITTEE ON NECROLOGY OF ILLINOIS STATE DENTAL SOCIETY.*

BY C. M. MEADE, CARMI, ILLINOIS.

Since our last meeting, twelve of our members have been called by death to enlist with the throngs of the great beyond.

The committee regrets not having been able to secure complete and correct information concerning some of our deceased members.

Therefore the committee begs the kind indulgence of members, friends and relatives, for any errors that may be found.

Let us pause for a few moments to pay a merited tribute of respect to the memory of those who during the past year have been taken from us.

Dr. Oscar L. Peterson, of Chicago, was born in Indiana in 1877; died March 28, 1911, at the Ravenswood Hospital, Chicago. He graduated from the Indiana Dental College in 1901. He joined the Illinois State Dental Society in 1909 and was a faithful member until his death.

He was a member of the I. O. O. F. of Carterville, Indiana.

Besides being an active professional man, he had great civic pride. He was president of the North Avenue Business Men's Association, and was planning an extensive building campaign for that section of the city in which he lived when he became ill.

He is survived by his mother, four brothers, and two sisters.

Dr.C. E. Warner was born near Lake Wood, Illinois, July 1, 1880. He lived in Shelbyville, Illinois, until he entered the Chicago College of Dental Surgery and graduated from there in 1901. He located in Evanston, Illinois, in 1902. He was a member of the Xi Psi Phi Fraternity and was also a Knight Templar.

His death was caused by the accidental discharge of a revolver while cleaning it on May 27, 1911.

He is survived by a wife and one daughter.

Dr. O. F. Brightfield was born May 9, 1856, in Scranton, Pennsylvania, and later his parents moved to Pittsburg, where he attended the public school until the age of fourteen. He then began work in a glass factory and worked faithfully until the age of twenty-one and had become very efficient at his trade. He then came to Illinois to continue his chosen work, but his health failed and he was obliged to retire from work for a year.

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*Read before the Illinois State Dental Society, May, 1912.

After this he decided to enter the Chicago College of Dental Surgery in 1886.

In 1889 he began the practice of dentistry in Belleville, Illinois, where he soon established a large practice.

He was married in 1891 to Miss Amelia Fisch of Belleville, Illinois, and two sons were born to them.

His wife died March 25, 1910. Through his tender love and sympathy and continued worry and grief over the loss of his companion, he soon become ill and continued to lose his physical vigor until in September, 1910, he had to undergo an operation from which he never fully recovered, and died June 22, 1911.

Dr. John D. Nicol was born in Peoria, Illinois, March 5, 1860, and died in the same city on August 4, 1911.

He was of a sturdy Scotch parentage. He attended the public schools, studied dentistry in the office of Hewitt Brothers and was graduated with honors from the University of Pennsylvania in 1883.

Returning to Peoria, Dr. Nicol demonstrated the fact that if a man can make good, he can succeed even in his own town.

Dr. Nicol stood for everything that was good and upright in character. He was an agreeable companion, a staunch friend, a loving husband, an indulgent father, an honorable competitor and a Christian gentleman.

By his absolute integrity and unremitting industry, he speedily built up a large and remunerative practice, which was his pride to the day of his sudden death.

Dr. Nicol was a workman of unusual ability and versatility, with a sound judgment and the courage of his convictions; a wholesouled, genial man who believed in his calling and its worth to humanity. Capable, cheerful, optimistic, progressive, was this man who so recently was with us in the full glory of his strength.

Those in attendance at the annual meeting last year at Peoria remember with appreciation the untiring efforts and enthusiasm he so generously contributed toward the success of the meeting as a member of the local committee.

But those who will miss him most outside of his own family are the members of the Peoria County Dental Society.

So much had this society been benefited by his influence and ability as an active member for thirteen years that he was twice honored with the presidency, which office he held at his death.

On the night preceding his death he visited with friends, and beyond a slight headache was his usual self. At some time during the night he was stricken with a cerebral hemorrhage and lapsed at once into unconsciousness, which rapidly merged into the final sleep.

Always interested in all things which looked towards the betterment of humanity, he was active in many movements of this nature and had been honored with many offices of trust and responsibility.

At the time of his death he was a member of the First Congregational Church, the "Creve Coeur Club," and the Peoria County Dental Society.

He is survived by a wife and one daughter.

Dr. William A. Buscho was born at Morton, Minnesota, July 15, 1878, and died August 13, 1911, at Chicago, Illinois.

His death came as a distinct shock to many friends and acquaintances. He was taken sick on Tuesday, August 8th, and on the following Sunday was operated on for appendicitis, dying that evening.

His boyhood days were spent on a farm and attending the district school, but being energetic he early decided on attaining a higher education than could be provided in his native surroundings.

He first attended the Des Moines Business College; later he attended the Valparaiso University, and following his course in this institution he entered the Chicago College of Dental Surgery in the fall of 1901, from which he graduated in the spring of 1904.

At graduation Dr. Buscho located at the corner of West Madison and Robey streets, where, in the seven years since, he built up a substantial practice.

He was a member of the Chicago Dental Society, the Illinois State Dental Society, and at the time of his death was secretary of the West Side Branch of the Chicago Dental Society, having given clinics at the state and national conventions last year. He was very active in dental society work.

He was also treasurer of the Park Avenue M. E. Church, and a member of the Masonic and Odd Fellows fraternities.

In the death of Dr. Buscho the profession has lost one of its most earnest and enthusiastic members.

Though naturally of a modest and retiring disposition, he was always on the alert and ever striving to perfect himself that he might better serve his patients. Such qualities as were possessed by this young man should be emulated, and his untimely death is sincerely regretted.

He leaves a wife and one daughter, one year old.

Dr. W. A. Gorney was born in Illinois in 1881 and died October, 1911.

He graduatel from the University of Illinois in 1904. He joined the Illinois State Dental Society in 1906. He practiced in Chicago.

Dr. W. L. Rybstat was born in Russia in 1868 and died November 4, 1911.

He commenced the practice of dentistry in 1905 and joined the Illinois State Dental Society in 1906.

Dr. Raymond R. Pashley was born in Chicago, November 4, 1881, and died December 30, 1911.

Soon after graduating from the West Division High School he entered the Chicago College of Dental Surgery, graduating from that institution in the year 1904.

He was president of his class in his senior year, a member of the Delta Sigma Delta, secretary of the Y. M. C. A. and a loyal member of the First M. E. Church of Englewood.

He became a member of the Englewood Dental Society in 1904 and has always been a hard and loyal worker for its good. In 1909 he served the society as its secretary, attending to its duties with much credit to himself and honor to the society.

In his death the Englewood Dental Society and the dental profession lost one of its most zealous and enthusiastic members, an ideal professional brother, a good Christian friend and a man who fearlessly and willingly performed every duty to his profession and society at large.

In the untimely death of Dr. Joseph P. Crowe, of Chicago, we are brought to the true realization that 'midst life there is death.

On January 20th Dr. Crowe was on his way to his Dearborn street office, full of life and hope; when he left the Clark street car at Locust street and was trying to cross to the east, an auto truck threw him to the pavement and dragged him twenty feet. He received injuries from which he died a few hours afterwards in the Passavant Hospital.

He graduated from the Chicago College of Dental Surgery in 1900.

He leaves to mourn his sad death a wife of only two months.

Dr. William E. Blair was born June 30, 1876, and died March 7, 1912.

He was the third child of Rev. and Mrs. J. G. Blair. In childhood he united with the M. E. Church under his father's ministry, and always took an active part in church work.

After completing his high school course he took a course in Grand Prairie Seminary and then graduated from the Chicago College of Dental Surgery in 1902.

After graduating he practiced for two years in Wyoming, Illinois, and then spent three years in the practice of dentistry in India. Returning to Illinois, he resumed practice in Keithsburg.

In 1907 he married Miss Louise Kistinger, and two daughters were born to them.

He was a member of the Warren County Dental Society, having joined in 1909, and remained an active member until his death.

He was a Christian gentleman, always having a keen perception of right and wrong and standing firm in his convictions.

Dr. Anna Lund was born October 13, 1866, in Christiania, Norway. She came to the United States at the age of three years.

She graduated from the Columbia Dental College in 1896 and practiced dentistry in Chicago up to the time of her death.

She is survived by her husband, Dr. Charles B. Lund, one daughter and two sons.

Dr. Oscar R. Smith was born in Chicago, Illinois, December 27, 1871. He attended the Chicago public schools. His first employment was with Dr. George Smith. He served as an apprentice for several years.

He then attended the Chicago College of Dental Surgery and graduated in 1891. He joined the Illinois State Dental Society in 1905 through the Englewood Dental Society.

He had a host of admirers, for he was a man of good morals, temperate habits, and a faithful and hard worker.

He was married on April 19, 1896, to Miss Eleanor F. Sloan. His wife and two children survive him.

Respectfully submitted
C. M. Meade,
W. O. Fellman,
T. A. Broadbent,
Committee.

REPORT OF COMMITTEE ON LEGISLATION.*

Your Legislative Committee desires to report that its activities since the last meeting have not been very extensive, matters not seeming to need any special legislative care.

We are, however, glad to report that, partly as a result of the activities of this association, there are now employed eight dentists to the following named charitable and corrective institutions:

Lincoln State School and Colony, Lincoln;
Soldiers' Orphans' Home, Normal;
Jacksonville State Hospital, Jacksonville;
Anna State Hospital, Anna;
Peoria State Hospital, Peoria;
Kankakee State Hospital, Kankakee;
Pontiac State Reformatory, Pontiac;
State Training School for Girls, Geneva;
St. Charles School for Boys, St. Charles.

It may be of interest to know that during the last five years the state civil service commission has notified twenty-nine applicants for appointments as dentists to state institutions, of whom eighteen presented themselves for examination; of these, thirteen passed. Eight are now in charge of the institutions named.

This shows that seventy-two per cent. of the applicants examined, passed, and that fifty-three per cent. of those who, by examination, became eligible, received appointments.

We are pleased to call the special attention of the society to the fact that the Pontiac State Reformatory is being cared for in this connection. In our last annual report we called attention to the great need of these services in this institution, and explained some difficulties at that time regarding the matter. This institution, since last year, has been brought under the civil service by an amendment to the civil service law, which became effective July 1st, 1911.

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*Read before the Illinois State Dental Society, May, 1912.

Your committee has no suggestions to present, but will be very glad to carry forward to their successors any expressed wish or instruction of this society, directing the future efforts of this committee.

Very respectfully,
Trueman W. Brophy,
G. Walter Dittmar,
Charles R. E. Koch, Chairman.

REPORT OF THE COMMITTEE ON THE PUBLIC PRESS.*

DR. C. B. WARNER, URBANA.

Mr. President, Members of the Illinois State Dental Society, Ladies and Gentlemen:

Since the time of its last report, your committee has been actively engaged. The collecting and preparation of the forty-eight articles of our newspaper service was a large job of itself. Most of the articles had to be twice rewritten after leaving the hands of the authors, as they were too technical for the average newspaper reader. In addition, scrupulous care had to be observed to have the information accurate, and free from advertising or other objectionable matter.

We next secured a written promise from the local newspaper publisher to use the articles before accepting any money. Where this promise could not be obtained, the money was immediately refunded. Where there has been a matter of doubt, the money has been retained until settled definitely, one way or the other.

The number of such refunds has amounted to about 10 per cent. of the publishers we have asked. The committee wishes at this time to personally thank the remaining 90 per cent. of the publishers, who assisted us in this campaign for a clean mouth. About two-thirds of the newspapers in this state are co-operating with us; and this is a high average, as there are many towns supporting newspapers that have no dentist. There has been more or less indifference between the newspapers and the professions; and this is largely a matter of prejudice on both sides. Such a condition should not exist, and we urge each member of this society to aid his local paper to the best of his ability; by so doing he will soon break down this prejudice, to the great advantage of all concerned. There has been some knocking by some of the newspapers (and also by some of the dentists), but these have been slight as compared to the pleasing assurances from others.

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*Read before the Illinois State Dental Society, May, 1912.

This committee did a wise thing in not limiting itself as to the time of the publicaton of these articles, for a work of this magnitude requires a great amount of time and patience. Those who sent us money agreed to abide by the rules of the committee, and we have held them up to their promise, for 18,000 articles that will appear in this state cannot be made into plates and published in a single day. In some instances we have been hampered by forgetfulness on the part of the publisher, again it is the failure of the express company in delivering the plate. The primary election and the election speeches also have had a tendency to delay publication of these articles, as the publisher often holds them in reserve until his columns are not so crowded. Owing to these conditions there is no uniformity in the publication. Some of the newspapers are now ready to start, while others are half through the series.

In the large metropolitan cities the newspapers are handled differently than in the small towns where plates are used. In Chicago, Dr. Koch is on the job with promises from the leading dailies. He is handling the matter his own way, and is going about it in the way that will bring the best results.

In our last report we mentioned that the states of Indiana, Missouri and Nebraska wished this service and we gave it to them, believing it to be our duty as a society to spread the gospel of a clean mouth. Today those states show as good a record in the publication of this series as does this state.

At its last meeting the National Dental Association appointed a similar committee to still further carry out the work in other states, and now there is not a state in the Union without this service. We have given the articles to various farm journals and other national publications. We have stimulated successfully the idea of articles on the care of the teeth in certain magazines devoted to the interests of women. Through our suggestion certain manufacturers of proprietary dental articles now mention school inspection in their advertisements in the lay magazines. We have supplied, free of charge, literature on school inspection, which we have sent to those cities in this state where public dental inspection was being promoted. We are now introducing the idea to the manufacturers, of wrapping literature around each bottle of tooth powder. This literature to set forth the advantages of public dental inspection as well as to give the public the latest expression as regards oral hygiene.

In conclusion, the committee wishes to thank those who have assisted us in our work. There have been times when we have been obliged to call upon others to assist, and in nearly every instance such calls have met with a hearty response. The chairman of this committee will be at headquarters, where he will be pleased to meet and advise with any who may wish to see him. Signed:

C. B. Warner, Chairman;
C. N. Johnson,
L. R. Snowden,
Publicity Committee.

Springfield, Ill., May 14, 1912.

REPORT OF COMMITTEE ON CLOSER RELATIONS AND CO-OPERATION WITH THE ILLINOIS STATE MEDICAL SOCIETY.*

DR. F. B. MOOREHEAD, CHICAGO, ILL.

Your committee on closer relations and co-operation with the Illinois State Medical Society begs leave to submit the following report:

This committee co-operated with the public service commission in sending a personal letter to each physician in the district where public health meetings were held — 500 letters were addressed to physicians, calling attention to the object of the meetings, and urging upon them attendance and sympathetic co-operation. The editor of the Illinois State Medical Journal, the official organ of the Illinois State Medical Society, has promised to publish an article, which is now being prepared by your committee. The purpose of this article will be to indicate, in a logical way, the physician and dentist as co-operating agents, charged with promoting the physical weal of society. The editor has also promised to write an editorial, to appear in the same issue with the article, emphasizing the question, and calling the attention of physicinas to the article. The editor of the Dental Review has also promised to publish the article in his journal. This will bring the question to the attention of every physician and dentist in the state, in a very definite way.

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*Read before the Illinois State Dental Society, May, 1912.

There is but one basis on which the physician and dentist may be brought into sympathetic co-operation. The dentist must know more general medicine. There are two things demanded of the specialist. He must be well informed on the subject of general medicine, and he is expected to be an expert in the particular field he has chosen. Only on this basis may the dentist hope to form a fellowship with the general and special practitioners of medicine.

All the "signs of the time" point with definite accuracy to one very vital fact, viz.: the dentist of tomorrow must either possess a better knowledge of general and special pathology, or his field, instead of becoming larger and more useful, will be occupied in part by other medical specialists. The tremendous emphasis being placed on mouth conditions in their relations to the general physical economy is sure to develop a group of men competent to meet this new problem. This group must either be found among the dentists or other medical specialists. That the call should be answered by the dentist amounts to a truism.

This society has taken high ground in emphasizing the relation of the mouth and teeth to general health. Every practitioner of dentistry in the State must make very definite preparation to meet these added responsibilities or the campaign of the year will act as a boomerang.

Your committee recommends the formation of groups, in towns or districts, for the study of general and special pathology. In these groups the physician and dentist may study together with mutual interest and profit. Co-operation in this way may be permanently established.

REPORT OF THE PUBLIC SERVICE COMMISSION.*

BY WM. H. G. LOGAN, CHAIRMAN, CHICAGO, ILLINOIS.

One year ago today Dr. D. M. Gallie in his presidential address, entitled, "The Time, the Place and the Work," discussed what had been accomplished in every city in the United States and Canada which had over 35,000 inhabitants, in reference to the cause of oral hygiene, and from this mass of authoritative information he felt called upon to make the following statements in regard to the comparative results obtained by our efforts in this State in educating the public to the relation which exists between good teeth and health.

When discussing this phase of the subject, Dr. Gallie said: "The time has come when we, as a society, must do something more than discuss the question among ourselves; for, like the tailors of Tooley street, we have been satisfied to consider ourselves the people and have not been doing things to make others agree with us.

"At the present time the question of oral hygiene is of national interest, but before it can be made effective it must be a national issue, and before it can become a national issue it must be demonstrated that as a community issue it has proven its value."

He further stated that "This Society, in undertaking this movement, has been fooling away time; but the time has now come when we must deliver some goods. For we have been groping and feeling our way, and it is high time that this Society, with its 1,600 or more members, should do something, and we cannot do anything of consequence unless we have the money with which to accomplish it." He closed his remarks with the statement: "I would have you remember we have a duty to perform, and the people are expecting us to do it. It is in the air, and we have got to assume the responsibility, no matter how much money, time or energy it takes."

And Dr. C. E. Bentley, our chairman of the Public Dental Education Committee for the past six years, undoubtedly held quite the same ideas as did our president as to what had been accomplished in the oral hygiene movement in this State up to that date; and also had a very clear idea as to the immediate needs of the future if this work was to progress, for we find that Dr. Bentley stated in his discussion of this paper, or in his report of the Public Dental Education Committee's work, that "The Public Dental Education Committee, like all similar committees throughout the country, had been feeling and groping its way during the last year."

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*Read before the Illinois State Dental Society, May, 1912.

"I would say we were in a nebulous state, lacking in precedents and with an increasing demand on the part of the public that something be done, we have been trying to get things into focus. The amount of work to be done is staggering. The means with which to do it are, at best, wholly inadequate. With years' work, we are only beginning to get a true sense of the proposition before us."

And to quote him further: "We need in this propaganda, more than anything else, constructive work. We have got to construct a system or method by which this work can be carried out. This is our responsibility. The capital fact of the situation is that up to this time we have not demonstrated constructive ability to grapple with the situation. The cause lies near at hand. Whatever else may be done, let us not forget that opportunity is knocking at our door and with it responsibility."

The above opinions have been reviewed to show that the active men of this society felt the time had been reached in our development when the dental profession of our state must assume the responsibility of educating the public in the influence that diseased conditions of the mouth and teeth have upon the individual's welfare, and a consideration of their relation to the community's health; or admit to the public that we as a profession are unable to cope with the oral hygiene problem.

However, whatever may be said of our society's progress up to the present hour in solving this great health problem, I feel sure that when five or ten years more have passed the dental societies of the various states and nations will look to this organization for an example as to what can be done, as well as how to do it, when developing and carrying on their oral hygiene movement, in just the same way as they have been accustomed to do for a great many years when seeking information for plans for society organization in the creation and maintenance of professional harmony.

As the result of Dr. Gallie's splendid address, the Executive Council, in regular session, one year ago, appointed the chairman of each of the five following committees: Post-Graduate, Public Dental Education, Public Press, Legislative, and the committee to promote closer relations and co-operation with the Illinois State Medical Society. These five were constituted a committee to be known as the Public Service Commission of the state society.

Its duty was to further publicity of dental knowledge to the public and to correlate and harmonize the work of their respective committees so there would be no repetition, and whatever was undertaken was to be done in accordance with some general plan to be worked out and adopted by the commission. Said commission was composed of the following members: C. R. E. Koch, C. E. Bentley, F. B. Moorehead, C. B. Warner, and Wm. H. G. Logan, chairman.

The members of the Public Service Commission having been appointed in May, 1911, at Peoria, met in Chicago in June for organization, and at that meeting adopted the following general working plans for the ensuing year:

First—It was deemed wise to have the Public Service Commission and officers of the Illinois State Dental Society to undertake the task of having each component society hold two similar meetings during the ensuing year, with the exception of those societies holding but one meeting annually.

On May 4, 1912, letters were sent into each district where two or more meetings were held annually, to ascertain to what extent the general plan as laid down by the commission has been followed. On May 8, four days later, 23 of the 25 districts to which letters had been sent had replied. This statement is here recorded to show how alert and prompt the various members of the profession have been when the commission has been in need of information.

In these letters we learned that 70 per cent. of the societies had carried out two similar programs during the year.

The second part of the plan as outlined was that each component dental society was to be urged to invite the officers of their local medical society to furnish them with the name of a physician who was well qualified to present before said dental society on the date of their first meeting a paper or lecture upon the following subject: "A discussion of the influence that diseased conditions of the mouth and nose have upon the individual's welfare, and a consideration of their relation to the community's health."

The reason the committee wanted the local medical society to choose the physician to discuss this subject, instead of allowing the dental profession to do it direct, was that the commission thought that by this plan the medical profession in the community would officially receive information that the dental profession desired instruction in this subject from one of their members.

It was also believed that if in every instance a physician could be secured to look into the relation that septic conditions of the mouth have upon the individual's welfare, we would have in that community a very intelligent medical enthusiast for the cause of oral hygiene. And, furthermore, if the choice of the physician was to be left to the chairman of the local dental program committee, he might in many instances request his medical office mate to prepare that paper, thus possibly causing discord in the local medical ranks.

The percentage of societies that held more than one meeting during the year which had the medical lecture was 80.

The third section of the plan was that each component society through its officers was to be informed that if they should bring the above-planned program to a successful issue the Public Service Commission would pledge themselves to furnish this local society with a man for a subsequent meeting who would give a lecture or paper upon oral hygiene, dental prophylaxis, or pyorrhea alveolaris, with clinical demonstrations when desired.

The reason the commission promised to send men to discuss these subjects was because it was the intention at that time to have the post-graduate course cover oral hygiene, dental prophylaxis and pyorrhea alveolaris; but the post-graduate committee found that there were less than a dozen authoritative articles dealing with the influence of oral sepsis and the accompanying pathological tissue changes. Therefore, men were sent out to lecture on dental prophylaxis and pyorrhea alveolaris and such other destructive diseases of the supporting structures of the human tooth that have their origin at the gingivae.

We find from the letters referred to that 84 per cent. of the component societies which held more than one meeting during the year studied and discussed this subject among themselves, or received a lecture from men sent to them by the commission.

The fourth proposition in the general plan was that ten or fifteen district meetings should be held, occupying both day and evening. For the day meeting papers and clinics; while the evening session was to be given over to a lecture for the general public. The Public Service Commission was to furnish the public lecturer, who as a rule would also take part in the dental program of the day.

Twelve such meetings were held. However, the one which occurred in Kankakee was in reality under the direct charge of the Public Dental Education Committee; but the expenses of the lecturer were cared for by the commission. Said public lectures were held in the following towns and the attendance is here given.

Rockford—W. A. Evans, lecturer, Rockford Hall. Meeting in evening. Discussion of the subject continued by Drs. C. N. Johnson and C. E. Bentley, of Chicago. School children did not take part in the program of the evening. Attendance 250.

Bloomington—F. B. Moorehead, lecturer; under the auspices of the Mothers' clubs, Unitarian church. Meeting held in the evening. School children did not take part in the program. Attendance 100.

Monmouth—F. B. Moorehead, lecturer; under the auspices of the School Masters' club; meeting held at 3 P. M. in the high school bldg.; school children took part by opening and closing the exercises with song. Attendance 500.

Rock Island—J. P. Buckley, lecturer; meeting held in the evening under the auspices of the Board of Education in the high school bldg. High school orchestra furnished music for the occasion. Attendance 450.

Carmi—J. W. Roper, lecturer, substituting for Dr. D. M. Gallie, who was unavoidably detained by injuries sustained in an automobile accident. Meeting held in Christian Church. School children taking part in the program. Attendance 500.

Joliet—F. B. Moorehead, lecturer. Meeting held in the evening at the Steel Workers' club. School children opened and closed the exercises with song. Attendance 500.

Urbana—C. N. Johnson, lecturer. Meeting held in the evening under the auspices of Women's clubs, in a church. Chorus of 250 school children opened and closed the exercises. Attendance 800.

Paris—C. N. Johnson, lecturer. Discussion continued by Dr. A. D. Black. Meeting held in the evening under the auspices of the Women's clubs, in the Methodist Church. Large chorus of school children. Attendance 1,000.

Dixon—J. P. Buckley, lecturer. Meeting held at 3 P. M. in the Opera House, under the auspices of the Board of Education. 6th, 7th, 8th grades and high school adjourned, marched with teachers to the opera house; large chorus opened and closed the exercises. Attendance 1,100.

Edwardsville—C. N. Johnson, lecturer. Meeting held at 3 P. M. under the auspices of the Women's club, in a theatre. 6th, 7th, 8th grades and high school adjourned, marched with teachers to the theatre. School children took part in the exercises with songs. They were entertained before and after the lecture by instructive motion pictures. Attendance 1,200.

Belleville—A. D. Black, lecturer. Meeting held at 3 P. M. in a theatre, under the direction of the Board of Education. 6th, 7th, 8th grades and high school adjourned, marched in a body to the theatre. Chorus of school children opened and closed the exercises with song. Attendance 1,400.

Fifth—That the proper public audiences might be assembled with some degree of certainty, the following plan was to be pursued: The Public Service Commission was to receive from local dentists names and addresses of all officers and members of the five following groups, who resided in the city where the public meeting was to be held.

1. Clergymen and officers of Women's Clubs, with addresses.
2. County superintendent and all school teachers, with addresses.
3. State Senators, Representatives and Congressmen of the district, with addresses.
4. Members of the medical profession who practised in this city and were members of the local medical society, with addresses.
5. Editors of local newspapers.

And about one week previous to the proposed meeting, each individual forming these groups was to receive two letters. The first letter to come from the local committee who furnished the Commission with the names and addresses of these groups, and the second one to be sent by the Public Service Commission.

In the letters sent to the various members of these groups by the commission, the individual was informed that a speaker would appear before a public audience in their city and deliver a lecture on "Teeth and Health," and that said speaker was a member of the Public Lecture Bureau of the Illinois State Dental Society, and was secured for the occasion by the Public Service Commission. Also that this educational movement was being carried on throughout the entire state by the Illinois State Dental Society, to the end that a healthier citizenship might be developed.

Dr. Koch, chairman of the Legislative Committee, sent 55 letters to State Senators, Representatives and Congressmen of the districts, urging their attendance at the these meetings.

Dr. Moorehead, chairman of the Medical Committee, sent 226 personal letters of invitation to the ethical physicians residing in the cities where these public meetings were to occur.

The chairman of the committee sent to the clergymen, officers of the Women's Clubs, County Superintendent and school teachers, and to members of the medical profession in those cities where Dr. Moorehead appeared, and to the district officers and committees having these local meetings in charge, 2050 personal letters.

The various local committees all combined, sent the same number of letters as did the commission.

It is the writer's opinion that the size of the audience was not influenced largely by the sending of this great number of individual letters, yet he feels that there was a value in informing the medical profession, the clergy, officers of women's clubs, senators, representatives, congressmen and county superintendent of the district that the dental profession was endeavoring to do something to reduce the prevailing condition of dental caries, and to improve the general health of the citizens that go to make up our commonwealth.

The position of the oral hygiene movement in this state at the present time is almost wholly due to the hearty support given the cause by the various local committeemen having these meetings in charge and to the men who gave the public lectures before these audiences.

Yes, to these lecturers would I give the greatest part of the credit, for every one of them handled his subject in such a masterly and brilliant manner, that great honor has been reflected upon our profession through the reports that have been made by the public press where these meetings have been held.

In closing this report, I wish to call the attention of the entire membership to the liberal treatment that has been accorded our movement by the public press in both the news and editorial columns. For we have received as high as 60 and 70 full columns of publicity in certain cities where our public meetings have taken place.

The future progress of the oral hygiene work will be determined at all times by the willingness of the dental profession to keep constantly alert to the opportunities presented.

The expenses of the lecturers to and from the meeting places has been cared for by the commission; while the expenses incident to the local arrangements have been paid by local dental societies, or divided between the individual dentists residing in the cities where the meetings were held.

We distributed at these meetings 3,000 copies of the State Society's booklet, entitled "Care of the Mouth."

The council appropriated $500.00 to defray the commission's expenses for the year. However, we have been able to pay all of our bills and carry on a very satisfactory campaign by only spending $286.00.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A Regular Meeting was held April 16, 1912, with the President, Dr. G. Walter Dittmar, in the chair. Dr. Arthur D. Black read a paper entitled "Preventive Treatment of Peridental Disease," with lantern slide illustrations.

DISCUSSION.

DR. J. V. CONZETT, Dubuque, Iowa:

The presentation of a paper on this subject is a cause for congratulation to the Society before which it is presented, and to the profession in general. It is a cause for more felicitation that the author is a member of this society. The subject presented is most relevant and timely, for there is no disease that is playing more havoc with the dental organs, or causing more general systemic disturbances than pyorrhea, and anything that will help us to recognize the cause, or causes, and thereby enable us to more intelligently institute preventative measures, will be of vast benefit to the profession and the whole human family.

I want to heartily congratulate Dr. Black upon his most excellent presentation of the subject, and to personally thank him for the benefit that I have derived from the reading of the paper.

As he has said, the medical profession is rapidly awakening to the importance of the mouth as a portal of entrance to all sorts of pathogenic organisms, and are recognizing the fact that the beginnings of many general pathological conditions are to be recognized in the mouth.

Dr. Evans is authority for the statement that the majority of the diseases that attack the human organism have their inception in the mouth, and Dr. Leary has demonstrated the fact that organisms residing in the mouth are far more pathogenic when taken from an unclean mouth than the same organism taken from a well-kept mouth, showing that we are able, in a measure at least, to control the pathogenicity, if not the presence of bacteria in the mouth.

Other authorities, as cited, have demonstrated the entrance of various disease producing organisms into the tissues through the agency of diseased conditions of the oral cavity, and Dr. A. M. Pond, of Dubuque, in a paper read before the Des Moines Valley Medical Society cited a number of cases of rheumatism, endocarditis and pericarditis, that had their origin in septic conditions of the mouth, and not until the pathological condition of the oral cavity was corrected was there any degree of success in the treatment of the ensuing disease. We might follow these citations with many others from medical and dental literature, as well as from cases from our own practice were it necessary, but sufficient has been said by the essayist to convince us that the condition of the mouth is of the most vital importance to the general health of the individual. But *you* all know that and it is not necessary to emphasize these facts for *your* benefit, but the vast majority of the profession either do not know it , or have so dulled their senses of observation, by the frequent seeing and overlooking of the most patent cases of oral sepsis, that they fail to appreciate the importance of the conditions. And it is for such men that it is necessary to iterate and reiterate, to emphasize and re-emphasize the points that have been mentioned. I speak with feeling upon this subject for it has been my misfortune to come into contact with so many cases that have been under the care of other men and have come to me directly from other dentists with the assurance that all was well with the mouth, when the condition of the oral cavity was a festering mass of putrescence. Just an instance or two. One of our surgeons came to me some time ago and wanted me to go with him to examine a patient for whom he had recently removed the superficial cervical glands for tuberculosis, and now found that the deeper cervical glands were also involved. He said that before the first operation he had asked about the condition of the teeth, and had been informed that the teeth had been placed in good condition by a dentist very recently, so concluded that the teeth had nothing to do with the infection, but upon a recurrence of the conditions he became suspicious and asked me to make an examination. Upon doing so I discovered two badly broken down teeth, with only the roots in evidence. The roots were in a decidedly septic condition and I felt sure were the cause of the difficulty, for they were upon the same side as the involved glands. We removed the roots, curretted the sockets, and in a short time the girl was out of bed and gaining rapidly in flesh and ultimately made a perfect recovery without any further operative procedures. If the first dentist had recognized the gravity of leaving such conditions in the mouth I am convinced that the first operation would never have been necessary, for there would have been no glandular involvement, for it all resulted from the septic condition of the tissues about the diseased teeth. Just last week a man presented himself to me for treament and I found a decided pyorrheal condition of nearly all of the teeth, and immediately instituted treatment therefore. After the second treatment he said: "Why didn't the other man that I went to week before last do this for me?" This was the first I knew that he had consulted anybody else, so I said "Have you been to somebody else about this condition?" and he replied "Yes, I went to another dentist and asked him to look me over and he cleaned my teeth and said that I was all right. Now, why didn't he discover this condition?" I could only say that I supposed that he had failed to recognize it. But this sort of thing is of such frequent occurrence and I am sure must be presenting with the same frequency in the offices of other men that are making a practice of the treatment of pyorrhea, that I am led to the conclusion that the majority of the men in the profession fail to recognize a septic condition of the mouth, and particularly the mild cases of pyorrhea and gingivitis, and only take cognizance of them when the condition becomes intolerable to the patient. Therefore I want to applaud the endeavor which Dr. Black is making, to awaken the profession to the gravity of the beginnings of septic conditions in the mouth, and if there is anything that I can do to second his efforts in this attempt, I will gladly do it. We resented the stricture of the garbled report of the lecture of Dr. Wm. Hunter in *Current Literature,* and yet, false as the generalizations of that article were, there was so much truth in it that it made some of us feel mighty uncomfortable in behalf of the profession that we love so much, which was being wounded in the house of its friends.

The Doctor did not go into the etiology of pyorrhea to any extent, but I am sure that all of the cases of pyorrhea that have come under my observation did not come as a result of the deposition of salivary calculus, or of any traumatic injury to the gingivae. In a paper which I read before this society some years ago I outlined my theory of the etiology of pyorrhea, so will not take the time to go into the subject at the present time, suffice it to say that I am more firmly convinced than ever that pyorrhea is a local expression of a systemic dyscrasia, and the work of Dr. G. V. Black which he has so recently given to the profession and in which he demonstrates that fact that systemic conditions determine the deposition of salivary calculus, more firmly entrenches me in that opinion. But it is an undoubted fact that any sort of irritation to the gingivae will ultimately lead to a condition of gingivitis, recession of the gums, exfoliation of the teeth and in those cases in which the resistance of the organism is not sufficiently great to prevent, an infection leading to a true pyorrhea with the resultant flow of pus from the gingival pockets. This irritation may be a toxin that is taken into the system intentionally, as in the exhibition of mercury iodide of potasium, of bismuth, for their medicinal effect, or they may be taken into the system accidentally or be occupational toxins, or they may be and most frequently are, in my opinion, toxins that are elaborated in the metabolism of the organism, and as a result of faulty elimination, are not excreted in the manner that they should be and are vicariously excreted by the subgingival mucous membrane, and by their retention under the gingivae set up the beginnings of the train of conditions that we nominate pyorrhea.

Now any irritant will do this, whether the irritant is from within or without the organism, just so it is in such contact with the gingival membrane that it will be an irritant. As the Doctor has shown these irritants are being placed there by dentists in the mistaken attempt to correct faulty conditions that present for treatment. Fillings that are improperly made, so that the contour of the tooth is improperly restored, and a resultant faulty interproximal space is left to be a continual source of annoyance to the patient and a menace to the life of the tooth, by allowing food particles to crowd into the space impinging upon the gingivae, to the intense discomfort of the patient and the ultimate loss of the tooth. Several years ago the cashier of one of our banks came to me with a tooth that had been filled some time previously and he said that after the tooth had been filled he went back to the dentist complaining that he was continually annoyed by food crowding into the space between the teeth and the dentist to correct it took a separating file and filed between the teeth. We know, of course, that that did not correct the difficulty, but made it worse, when he again went back and the same process was repeated. This was done several times, and finally the patient, receiving no benefit, came to me. I found that the tooth was so badly diseased that it could be removed with the fingers, and was, of course, past all hope, so was extracted. A tooth lost because the dentist did not know that if he did not properly restore the mesio-distal diameter of the tooth, the contact point, and in consequence the interproximal space, that he would not save the tooth.

Within the past week I have had another similar case that has not progressed quite so far, and with a proper filling of the teeth and a building over the space of an extracted tooth to prevent the movement of the filled teeth away from each other, thereby again making a food pocket, I am going to reproduce a condition of health and comfort in a case that has been a torment for several years.

The leaving of overlapping edges of fillings and crowns is a condition that is pregnant with the most direful results to the gingivae. Dr. Black has wisely emphasized this point and has given us many illustrations of the disastrous results of such neglect in his examinations. These edges impinging on the peridental membrane, or the rough edges irritating the gingivae, act in the same manner as rough masses of calculus, or irritating deposits of chemical excretions imprisoned under the gum margin. There is first an irritation, then a gingivitis, acute, and if not relieved, becoming chronic, and degenerating finally into a true pyorrhea with the recession of gums and the whole train of symptoms, ending with the loss of the tooth.

All fillings and inlays should be flush with the tooth and should be polished as finely as possible, or the gum will not perfectly tolerate such a margin under it, but will either draw way from the rough or overhanging edge, or will become inflamed and spongy.

A few years ago one of our physicians sent me his sister with a condition of the gums that had excited his alarm. There was a well-defined tumor of the gingivae and though it had been repeatedly excised it kept recurring. On examination I found that the diseased gum was immediately over an amalgam filling that had a very badly overlapping margin. I removed the filling, excised the tumor, replaced the filling with one that was properly made and never had any further trouble with the tumor. And recently I have had another similar case that had for its exciting cause a badly fitting gold band that served as one of the abutments of a bridge. In order to cure the condition it was necessary to remove the bridge, excise the hypertrophied gum tissue and make another bridge that did not irritate the gingivae.

These illustrations could be multiplied ad infinitum, but enough has been said to demonstrate the fact that a large number of the profession have a very inadequate conception of the evils caused by careless and bungling operations in and about the teeth, and it is time for us as a profession to sound the alarm and to so thoroughly emphasize the danger of such unworkmanlike methods that every man in the profession will be compelled to take cognizance of the campaign for better gingival conditions that we are making.

The propaganda of prophylaxis is doing more to correct such conditions than anything of which I know, and while I know that there are those that overdo the matter, they are in the very great minority, and the best thing that we can do is to attempt to stimulate an interest in prophlaxis in the minds of the men of the profession, for when they do so and learn to recognize the beautiful results that are obtainable and are maintained by a systematic prophylaxis, they will be able to more clearly recognize any deviation from the normal and will quickly learn to diagnose the beginnings of pyorrhea, and detecting them will put in operation those simple methods that so quickly and certainly prevent and cure the disease in its incipiency.

DR. P. G. PUTERBAUGH

Mr. President: I want to emphasize and impress upon the members of the society this evening, the importance of recognizing gingival irritation in its incipiency. My series of examinations were made in the mouths of students coming from various parts of the country, and it was surprising to note that at least eight or ten foci of gingivitis were present in every case, and these were mostly in locations where if a little more care had been taken in the insertion of fillings or the fitting of bands for crowns, that condition would have been absolutely prevented.

I believe that in the making of the statistics that there was a good deal of difference in the manner of making the examinations and that the profession as a whole is somewhat divided as to just what constitutes gingivitis, but Dr. Black has this evening brought out the symptoms and diagnosis in such a manner that there is no excuse for erroneous diagnosis in the future.

A point that I feel that Dr. Black failed to put sufficient emphasis upon and one that is highly important, is the overcrowding of teeth, the anteriors especially, forcing them out of proper alignment; producing improper contacts and contracted and obliterated interproximal spaces.

In my examinations of mouths I have found very few cases of gingival inflammation in the anterior part of the mouth where the alignment was good. Learn to diagnose these conditions early, and put such mouths in a condition compatible with health instead of allowing them to go on to pus formation. In this connection I am reminded of an impression I received last evening when one of our students was operated upon for appendicitis; the appendix was taken out; it looked pretty nearly normal and it seemed to me that he did not need an operation at all. Later, however, the surgeon opened the removed appendix and the entire lumen was found to be filled with a sanguinous exudate, which if allowed to remain would have been pus in three or four hours. It occured to me then that if that operator had been a dentist he would probably have waited until pus had formed before doing the operation.

In regard to improper contacts, I think that a very frequent cause of improper contacts in molars and bicuspids is the building of crowns and inlays too high, raising the marginal ridge of one tooth far above that of the adjacent one. This is especially true of inlays. We place a piece of wax in the cavity, have the patient "bite," trim off the surplus, and carve to full occlusion leaving a V-shaped space where the inlay rises above the adjoining tooth, where food will crowd in and injure the septum. Be very careful to see that the occlusal surfaces are in the same plane, and the marginal ridges on the same level in all crowns and inlay restorations.

I hope that every one of you will make at least a few of these examinations in your offices. Look on each side of every tooth, examine the interproximal spaces and contact points and see if you can find a single mouth that is free from irritation. Then proceed to rectify the etiological factors at points of inflammation, using orthodontic measures where indicated (and this offers a large field for orthodontic procedures as prophylactic measures in the young.) I do not believe that two per cent of the crowns as constructed today are free from gum irritation, resulting either from lack of proper adaptation at the gum margin or to faulty contacts. And yet many of these cases go on for years without trouble until some systematic condition sets in which lowers the tissue resistance and true pyorrhea is established, the case changing from a simple to a complex one.

Dr. Black sums up the treament well when he says to maintain proper contacts, the proper mesio-distal diameter of the interproximal space, and to so finish bands and fillings that they will not injure the gingivae.

DR. DON M. GALLIE:

I desire to take this opportunity to pay my tribute to Dr. Black for his splendid contribution this evening to the literature of our profession . He informed us that after reading over a hundred articles pertaining to this subject, but few gave him any satisfactory data. It cannot be said after the publication of the essay of this evening that we are any longer without authentic data pertaining to peridental trouble. To me the most gratifying thing in the presentation of his essay is that the keynote he has sounded is for preventive measures. Dr. Black has conclusively demonstrated to us that the only way we can hope to combat this universal condition is by preventive measures and we cannot hope to have much success if we defer it to such a time that palliative or curative measures are resorted to. When we stop and consider that we are losing more teeth in the mouths of patients over thirty-five years of age by some other cause than caries, it behooves us to make a study and get to the bottom of the conditions that are responsible for this terrible dental devastation. When we consider the percentage as reported by Dr. Black this evening and the report of the gentlemen who aided him in the compilation of these figures and when you stop to think of the class of patients that such men likely would have and yet under these favorable conditions find such a tremendous percentage that were afflicted with peridental troubles, what can be expected from the careless and indifferent dentistry that is done by careless and indifferent dentists in the mouths of careless and indifferent patients, and there is no wonder that Dr. Hunter, the celebrated English physician, made the stricture on dentistry that he did before the student body at McGill University.

It must be a surprise to everyone who has heard this paper that such a small percentage of peridental trouble can be traced directly to salivary and serumal deposits. It must be a revelation to all of us to learn that the great percentage of this trouble comes from irritation resulting from imperfect fillings and imperfect fitting of crowns, and it strikes me that we are likely to have a great deal more of this trouble by the careless and indifferent restoration made by the inlay process, for the reason that it is difficult for many to get a perfect contour and a perfect contact so necessary to restore the original distance in the interproximal space and the original mesiodistal diameter of the teeth. There is not the same likelihood of the operator obtaining sufficient space to get this original restoration. Wax is forced into the cavity, the patient is told to bite, the proximal surface is trimmed up, the wax is removed, the inlay made, and inserted without obtaining sufficient separation to give us the original conditions, with the result that we have impinging upon the septal tissue and crowding out in the manner in which Dr. Black has indicated.

Dr. L. L. Funk:

I wish to mention the sanitary universal or bridge work and pyorrhea tooth brush as a preventor of peridental disease. It is absolutely sanitary and can be adjusted to many different angles, loops and curves and is especially applicable to most of the cases thrown on the screen this evening. If the roots of such teeth are scraped or the calcareous deposit is dissolved out with commercial muriatic acid and the brush passed between the teeth and along the buccal and lingual gum margins, morning and evening, there will be no recurrence of inflammation if the teeth are in proper relation to each other.

I have a number of patients in my practice who are keeping their gums healthy by using this brush. Owing to its delicate construction it is ideal for children as there is no danger of wounding the soft tissues with it.

Dr. F. B. Noyes:

I wish to say a word as to the early stage of gingivitis. After going into the study of microscopic sections I am impressed with the extent of tissue injury in the early stage of gingivitis. I find by studying this tissue under the microscope but a comparatively slight degeneration, scarcely more than a slight redness of the tissue later showing under the microscope the tissue changes characteristic of this pathologic condition a running through the gingival tissue and into the alveolar process; so you will find a reaction in the bones of the process long before it would be suspected from clinical observation, and that the presence of those cerumal deposits may perhaps have its pathology in some instances from the extent of the disease already present. That was still more emphasized and called to my attention in getting normal specimen of the tissues even from animals. A great many cases where the tissue was from normal persons, comparatively healthy tissue showed under the microscope slightly inflammatory conditions, and it was that laboratory observation that first called my attention to the importance of early gingivitis and emphasized in my mind the idea that the time to treat pyorrhea was when it was gingivitis, long before it had become pyorrhea. (Applause.)

Dr. Black (closing):

I have not very much to say, Mr. President.

I was impressed by the fact, as I am sure Dr. Conzett and others are who have read the literature on this subject, that a very large percentage of it is devoted to a discussion of whether or not the cause of this condition is local or systemic. I purposely wanted to keep away from that in my paper; I wanted to fix your attention on the local clinical symptoms which you must see and recognize. Granted that the origin of many of these things may be one thing or another, I know this; that if we correct these local conditions which I have mentioned and which we can all see, that the gingivitis generally disappears and does not reoccur. I quite agree with Dr. Conzett that many cases of gingivitis are systemic in their origin. I wanted to make this presentation practical, keeping away as far as I could from theories, and get at some actual facts. I am sure that gingivitis occurs from the local causes mentioned; I am sure it progresses to peridental disease if neglected; I am sure the inflammation subsides and the tissues return to normal if the simple treatment which I have mentioned is employed sufficiently early. These are facts which anyone may observe and record, as I have done. Should they not lead us to be more careful in our examinations and treatment of the gingivae?

In making these examinations I have been reminded again and again of a story of an old frontiersman. He had a tenderfoot with him and they were out in a boat. They needed some supplies; their food was getting short; they came up to the shore in a country this frontiersman knew well. He told the young fellow to go back in and see if he could find a farmhouse and get something to eat. He waited for him; finally he got tired waiting and walked up to the road, then returned. The tenderfoot came back and said he had been all over the country and there was nothing to be seen and it looked as though no one had been around for years. The old frontiersman said "why didn't you see about an hour ago there was a wagon went along there with a horse and mule hitched to it, a man walked in front, a lady and a little boy walked behind, the lady was barefooted and a dog was trailing along, lame in the left hind leg, and the horse had lost a shoe from his left fore foot? Did you not see them? I was up in the road and I know they went by about an hour ago because it was since that shower we had, and I saw your foot prints across the tracks." The frontiersman was able to give every detail, he took it all in at a glance. We ought to be frontiersmen in examining the mouths of our patients. (Applause.)

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held Tuesday, April 9, 1912, with the President, Dr. J. G. Reid, in the chair.

Dr. E. A. Royce read a paper entitled "The Dentist."

DISCUSSION.

DR. C. S. CASE:

I feel hardly capable of opening the discussion upon a question that implies so much and is so broad. It is one of those questions that one needs to sit down and quietly think about in order to intelligently discuss. It is a great question.

In regard to the medical degree. I have never considered that it should be regarded as absolutely important or necessary for a dentist to possess, but like other great branches of education it would help to broaden a man's ideas and give him a better education and a better understanding, because in taking that course he is obliged to go through certain studies and acquaint himself in certain branches that he would not do if he was left to himself. In that way it is certainly a great advantage to him.

I attribute largely the success I have had in my special branch of dentistry to the fact that I took the medical degree, and because I was obliged to fully acquaint myself with those branches which lie at its foundation. If every dentist would take up other branches of study, such as biology and geology and chemistry in its minutest detail, he would certainly improve and broaden himself.

I can remember a number of years ago Dr. Royce read a paper that did me as much good as most any paper I have ever listened to. It was in regard to the difference in the colors of the teeth, and I think this paper tonight, if it is taken up and studied carefully, will do as much good as that paper did.

I feel just at this time I am not prepared to discuss the question fully and give it that consideration it deserves.

DR. C. N. JOHNSON:

I want to express my very high appreciation of Dr. Royce's paper and to say that I am in thorough accord with the sentiments expressed therein. I believe that Dr. Case has probably misunderstood the purport of Dr. Royce's paper in one respect and I will ask Dr. Case if he took his medical degree before or after he took his dental degree.

Dr. Case:

Long after.

Dr. Johnson:

There is just the whole thing in a nutshell, Mr. President. Dr. Case did himself a great deal of benefit in taking that medical degree. Nobody will doubt that. I venture to make the assertion tonight that if Dr. Case had taken his medical degree and then his dental degree he would not be the great dentist that he is today. I say this advisedly in view of my wide experience in dealing with men in dental colleges who have been graduates of medicine in advance of their dental degree. They come to us, as Dr. Royce has intimated in his paper, with an exalted idea of the value of medicine and a very limited outlook so far as the value of the dental course is concerned. They have the wrong point of view, so far as the making of practical dentists is concerned, and I say a man who has been a medical graduate and then graduated in dentistry and made a successful dentist and is brilliant in his profession as a dentist, is so because of his inherent ability and a natural tendency toward mechanical pursuits. Our experience, and we have had a great many medical men in the college in which I teach, has been that they come to us with the idea that dentistry is a mere side issue and simply an appendix of medicine, with very little to learn after the medical course. I do not wish to seem to be in favor in any way of restricted education. I believe in producing the best possible dentists in our schools. I believe if we could get manual training in advance of our professional training it would be beneficial. A man's manipulative skill is one of the essential factors, and if you put him in the common school, and then in the high school and then to the university, it is barely possible that boy has lost the adaptability of his fingers to make a good manipulative dentist. We discuss this from a professional point of view, forgetting that the important factor is the service to the people. You and I are here to serve. I am taking up and examining this question as I have never done before. I read a book recently by William Hawley Smith and this book goes into the fundamentals of this question. The whole system of education, dental, medical and common school, needs to be revised. In the early days these methods were the best methods we could use at that time; methods by which we could accomplish the best results as we saw it, but the profession has grown very rapidly and not only that, but the demand of the people has grown much more rapidly. I am the last man in the dental profession to wish to narrow in any way the preliminary requirements of our students, and I glory in the man who has graduated in dentistry and then has felt he wanted to broaden his knowledge and graduate in medicine. I honor that man as I would honor the man who studied biology to broaden himself, or chemistry, but usually the man who does the greatest service to the people is the one who has concentrated himself on some one thing just as Dr. Case has done in orthodontia. Dentistry is so broad that no one man can encompass it.

Under the Virginia law a man must be a medical graduate before he is a dentist. I predict that this will not result in the best possible dental service to the people, because many of the young men who take the medical and then the dental course will, before the dental course is reached, have lost their manipulative adaptability to the extent that they will never make good operators.

Dr. P. J. Kester:

This seems to be getting back to the old question that we have discussed from time to time. I have not been in college work lately, nor have I been in it as much as Dr. Johnson, but I can corroborate what he has already said about the medical man who takes up dentistry. I think we all know the difficulties that we have in training medical men in dental lines. I did not graduate in medicine, although I had two years in medicine and could have graduated in medicine when I graduated in dentistry, but I liked to graduate with the dentists because I had been a dentist in teaching and had trained for several years so that I wished to get the general facts of the medical training with the man who takes medicine, entirely at first hand.

As to the time that a man should devote to his studies in dentistry, and as to the preliminary education, it seems to me that is a debatable question, just as I have raised the question with our past secretary of the Board of Dental Examiners as to the examination of a man who comes before the board to secure a license to practice dentistry. State laws say a man to practice dentistry shall be a graduate of a dental college. Now I do not believe that is any business of the state board of examiners where a man gets his knowledge; if he can demonstrate he has the knowledge necessary to practice dentistry, I do not think it is anybody's business. So regarding the preliminary education I do not know. I have known a great many dentists. One of the very greatest men in dentistry that I know, one of the greatest minds in scientific dentistry that I have personally known, was a man who never had but four months in a primary school. Some of the greatest operators and some of the most scientific men I have known are productions of the common schools in this country. I do not believe that a college education is any more necessary for the development of the dentist than it is to know anything about Choctaw, except that in college he learns certain things that will help him, but they are not absolutely necessary. A man can get these things; any man with an every-day high school or grammar school education can study dentistry as intelligently as any man who comes from Yale or Harvard. There is nothing in the study of dentistry that any ordinary intelligent man that is fairly developed from a common school of this country is not able to comprehend, either the essentials of dentistry or medicine or law. I think if this man wants to learn these things he can learn them just as well as the man learned them before him; so I myself do not believe that it is absolutely necessary for a man to have a college education to study dentistry. I believe, as has been suggested here, that it takes time to develop the dentist. As I think of it, the reason that I stuck to dentistry rather than medicine was because I had thought along dental lines; I had been trained along dental subjects and they occupied my mind. Had I studied medicine, the probabilities are I might have looked upon dentistry as a sort of mechanical job, as nearly all of our medical friends do; there are very few of our medical friends, as far as I know, take them as a whole, that have very much regard for dentistry. They look upon it the same or very little different from the jeweler or blacksmith and that of other mechanics.

I believe that Dr. Johnson is right and that we need to revise our educational methods; we are in a transitory state; we are leaving our old ideas of mind development; and the question is now whether they have got a system which will develop the youthful mind as well as the old fashioned country school that we all attended, and dentistry is the same to my mind to a certain extent.

We are just now in a transitory state and will finally evolve a plan which will develop dentists in the proper way.

Dr. Elliott R. Carpenter:

Mr. President and Members: I have never been a professional educator and therefore I am in no way fit to discuss this subject, but I want to say a word of appreciation for the thought and work that Dr. Royce has put on the paper and I know I shall enjoy and benefit from its further reading and study.

Personally, I do not quite agree with the preceding speakers in the fact that the medical profession do not appreciate what the dental profession are doing and their worth, and I think the attitude of Dr. Evans and your own personal family physicians would bear this out and discredit that statement. The medical profession have been forced to recognize that we are not merely higher mechanics and that we are delving very close along the lines they are and incidentally delving well.

I was very much surprised to hear of the law enacted by the state of Virginia, and I am perfectly certain it will be a great detriment to the people themselves in the state.

The principal thing that can be said from my point of view for college education before the dental course is the fact of the mental training and of its teaching men how to study and make deductions. If we must have a compromise on that, let that college course be one of higher mechanics—mechanical engineering and that sort of thing, and we will then get the broadening effect, the mental training, and carry along the training of the fingers, and I hope something of that kind will ultimately come about.

Dr. George W. Cook:

Like the rest, I appreciate very much Dr. Royce's paper and his attitude toward the question he has presented tonight and, of course, most of my thoughts and ideas have been very well expressed by the previous speakers. He has touched upon, I think, the very essence of higher education for dentists; instead of a medical education, let it be a broader education of science and mechanics.

The law of Virginia, which we have heard about tonight, is bound, I think, to bring a hardship to the people. I know from my own personal knowledge and my own personal observation, that the medical man who gets a medical education and ultimately comes to dentistry, finally comes too many times to depreciate the value of dentistry because he does not get a dental education, does not think the things he should in college, and goes around for a good many years without that necessary dental knowledge, and he begins finally to look upon dentistry as a failure.

We are not educated in the sense of being educated, and I fully appreciate the remarks that Dr. Johnson made on the system of education. Many of us remember a few years ago when some one advertised for a high school graduate to go to work for them. I do not know just what the position was, but out of several hundred letters they got applying for the position there was not a single letter that was received that had good grammatical expression or good spelling, and the comment was made then, "What does high school education amount to?" And it is true. Many of the best high school graduates that the dental colleges get are sometimes the poorest students that the dental college has in it. Perhaps he has learned botany, zoology, physiology and all that, and when he gets into college and sees how much there is to do he gets to work in the hope that he is accomplishing something and he does accomplish something, and many times gets a good scientific education in a dental college. Of course, qualification of a man is a great thing, but you got to have the man in the proper shape to be qualified.

I made the remark today to both Dr. Royce and Dr. Reid at lunch that I thought of all the men I have met, the dentist is the best trained thinker. He is able to concentrate his mind on a particular thing till his ingenuity becomes great. Do you suppose that Dr. William Taggart would have been the inventor that he is today, would have accomplished as much if he were a medical college graduate. I do not think he would. Because he saw the necessity of certain things, his concentration in that direction has made him what he is, otherwise he would not have been. He would probably have known a little more anatomy, talked some on physiology or some particular subjects of science, but he would not have been the inventor or genius that he is, could not have developed that ingenuity. This is true, and this is what has made dentistry—that concentration of thought, use of fingers and eyes that have made men see things, and know how to do things. The dentist learns to see and to do, and those are the most important things in education to my mind. They are the very essence of education.

In discussing the question of education with a gentleman who has been an educator of a very high character for a good many years, I said that the dental profession sometimes regretted that it had not had a broader education than it has had, and he made the very same point Dr. Johnson made a while ago. He said, I can remember when I was a boy, that is years ago when I got my first tooth, I can remember about the only thing we thought to do when a tooth ached was to take it out, and, he said, of course, I lost some valuable teeth at that time and I have felt the loss ever since. And yet many of the dentists of that day rendered the most valuable service that man could render to his fellowmen, and that is he helped him over a painful and difficult place when no one else could, and yet he was a poor dentist from the standpoint of the present-day dentist, and, he said, what are we going to do? Are we going to raise the standard of medical education? He said what we want is men who can relieve pain; we do not care so much how they relieve it, and the sooner they can do it, the better we will appreciate it, and I think that is true.

On this question of education requirements and examinations, I think we are entirely off. We are trying to do too much. We are trying to do something it is impossible to do with the conditions as they are. If you think of it, except in one or two instances, not a single contribution has anybody ever given towards dental education. Most men who have ever taught in dental colleges have done so at a great sacrifice. Men who have built dental colleges in this country have done it through their own ingenuity or manipulation of money affairs, and have given to the people the best it was possible for them to give at a great sacrifice. And then we talk of raising the standard of education. If the people want the standards raised let them do something towards it. What is the use of raising the standards until we get money to raise them? Why not go along and do the best we can as we have done? Those who have been connected with the dental colleges are just as anxious to turn out good dentists as the people are to have good dentists, and it has been done. I say there is not a better trained class of men that live than leave the college of dentistry at the present day. Of course, we know that it is like everything else, lots of them go through that are not as well qualified as we could wish, but what are you going to do, many of them are poor. What is going to become of those men; what is going to become of the poor people? I had two telegrams from a man in Michigan asking for a dentist; he lived in a town of 2,500 and had to ride thirty miles for a dentist and the dentists in the neighboring towns are so swamped it takes weeks and weeks to get an appointment. He said they need dentists and need them badly. When there is such a cry as that, are we going to compel the people not to have such services, even though they are not the best? Are we going to compel them to do as they did years ago?

I think this paper of Dr. Royce has struck one of the fundamental principles of our dental education and of our dental practice.

Dr. J. E. Hinkins:

I have enjoyed Dr. Royce's paper very much. I have long since in my opinion been convinced of the fact that the educated man of today is not necessarily a college-bred man. There is quite a distinction between an educated man and a college-bred man in more ways than one. I was very strongly impressed with this only a few months ago. Go back a few years when the school of Dr. Johnson and myself was organized; it required a medical education as a requisite before dental education, but after two or three years it was found to be a failure. Why? Because they were not turning out the class of men that the public wanted. They could not get remuneration for their services to pay for the investment that it was necessary to acquire this education.

In looking back over the past and looking into the future, I do not think there was ever a time in the history of the world when there was a greater demand for the highest type of man than today in all walks of life, and while this discussion has been going on I thought of a series of articles that I have been very much interested in, the transactions of the American association for the advancement of science, by Dr. W. J. Spillman. A proposition was made to the United States government that they should select a man to visit the charitable institutions in the United States, and he should submit a report of what he saw was necessary for the betterment of the education of the masses and the betterment of the people at large. So this series of articles had been written by Mr. Spillman for the last four or five years. Mr. Spillman has shown that seventy per cent. of the efficient business men of the United States today are country-bred children; he has also shown that in taking charitable schools throughout the United States that the country boys and girls are more efficient at the age of seven to nine, than the city boy or girl is at from thirteen to fifteen. He gives three reasons for that: First, that the child in the country is taught to do something if he is going to have any money; he has got to produce something; he is given some ground, or a pig, and that boy has got to produce something. The next was the advantage of fresh air, and, third, was the advantage of God's sunshine and mother earth. Those three things give the country boy a power which the city child can not acquire. Since these articles have come out I have followed along this line of thought very closely, and with a gentleman who is dead now, and for whom I have the greatest admiration and have met several times, and we have discussed the question pro and con. He was very much impressed along this line. He read those same articles and we talked them over. Many of you have read his book probably, and I have investigated in a small way the leading business men of the legal profession, the leading men of the medical profession, the leading men of the commercial world today, and you will find that by Mr. Spillman's statistics about seventy per cent. are country-bred boys who did not have the advantage of a college education. When I went to study medicine after consulting with a number of my friends, I was a poor boy and a poor man still, I considered that very carefully. I studied medicine in the Northwestern Medical School. I could have taken the medical degree easier than I could have taken the dental, but I could see nothing there I could produce with my hands; it was a question of when to give a dose of medicine and a question of writing a prescription and of giving something for nothing, and as I had a mechanical turn of mind I took to the dental profession and have worked along that line ever since because I believe in dentistry. I can do some good to man and that is some satisfaction; I can give something for something, which I could not do in medicine. In medicine I was giving something some one else gave me and I did not know much about it myself.

Dr. Johnson spoke along the line that we were not getting the best from higher education and that is what brought this line of thought to my mind; and so there is something radically wrong somewhere with the method of education today. If I understand education as it should be, it makes man of a higher type, morally and intellectually, but it does not seem to be so. Only last week I was at a meeting where the head man of the Y. M. C. A. was present and he had applications for young men to work. It represented a number of the leading business firms of Chicago and they wanted young men that were of good morals and good habits, and the letter closed by saying, Send us boys with common school education or high school education, and do not send us college graduates. That came from a number of firms in the city. I could name them, but I think I had better not. That is the situation today of higher education, and I think Mr. Crane said, and he well said it, that it was preposterous for any university or board of education, or school of education to say they could take a common mind and by higher education produce an uncommon mind. He said you could take a common mind and by higher education produce a very unsafe mind, but could not take a common mind and by higher education produce an uncommon mind. That is true. I believe today too many of our students are educated beyond their capacity to use it.

I may have wandered from the subject, but hope my remarks have been germane.

Dr. J. G. Reid:

I have been interested in this discussion. I have been interested in the paper. And as I survey the discussion from the paper, we have not settled the question, and of course, it will never be settled, because our whole system of education constantly changes. It has come within our own short lives that we have passed through periods of education and various kinds of education and what is good today is not going to be good in ten years from now. What is good ten years from now is not going to be good twenty years from now.

The moral side enters into this question, for when you consider education you cannot separate morality and education. Ordinarily a man that is educated, if he is educated properly, in the majority of instances is a moral man. There are exceptions.

You cite a Lincoln, you cite one man as a scientific man, or as one of the greatest scientific men of the dental profession; he had only four months of school education. What of it? One swallow does not make a summer. We did not educate the dental profession; we did not educate any one. One man did not do it, the citation of two men, or the citation of a hundred men did not do it. It is the citation of thousands of men that make progress in education. We had a Lincoln; well, now, we have not had any such man as that before nor since, but why? There was a peculiar environment, there was a demand for something to be done at that particular time; he was the man that should do it. Do you not believe there are other men that are just as brilliant and if in the same position would have done the same thing and perhaps done it better, but the opportunity was not there?

Dr. Johnson criticises our whole system of education, but he did not suggest anything that I know of. If we are constantly changing and going on we can't settle this question. We may have methods that are not perfect, but they have been a power of good in this world for the betterment of education, there is no question about that; and there is no reason for criticising that system. There is such a diversity of educational opinions in dentistry. There are some dental colleges that are just as far behind dental education today as they were twenty-five or thirty years ago when I went to college. There must be some controlling head somewhere. The dentist is a peculiar individual as a whole. I think I know a good many dentists, and so do all of you around this table, and we are acquainted with all classes of dentists in all stages, and we do not lose sight of the fact that we all do a great deal of good in this world as a profession, and we must not lose sight of the fact that a whole lot of dentists would be better off if they were not in the dental profession and the dental profession would be better off without them—that is a great majority of them. It is a fact that I believe there are too many poor dentists.

Dr. Royce (closing the discussion):

Mr. President: There is not much I can say in closing this discussion. I was led to write this paper because laws have been passed in several European countries and also in the state of Virginia, that work injustice to the average dental student, for while we all believe a man cannot be too well prepared for the practice of his profession, should not that preparation be along the lines of future endeavor? A course can be formulated which will properly prepare a man for the practice of dentistry without obliging him to spend years in the study of medicine. The preliminary university course, which the medical schools require now, is a course which is really preliminary to the medical studies and assists medical students in their work very much. It is quite possible the preliminary course for the dentist will be somewhat different, as has been suggested tonight.

Some of you may remember a paper written by Dr. W. E. Royce of Tunbridge Wells, some years ago, in which he cites the necessity of beginning the training in early youth of any one who would become expert on a violin or piano, because it is absolutely impossible for one of mature years to gain the finger skill necessary to become expert on these instruments, and the rule holds good in dentistry.

The thing that impresses me in regard to the students in dental colleges, is their tendency to make light of the scientific part of the work and their great ambition to put in fillings, with proper emphasis on the scientific work this could be avoided and the course so balanced as to turn out graduates well fitted for their work.

AMERICAN DENTAL SOCIETY OF EUROPE, THIRTY-NINTH ANNUAL MEETING, HELD AT BRUSSELS, APRIL 5TH to 8TH, 1912.

DISCUSSION OF DR. EPPRIGHT'S PAPER ON "THE TECHNIQUE OF MAKING A PORCELAIN JACKET CROWN WITH PRESSURE.

THE PRESIDENT

said he had been much interested in the system described by Dr. Eppright; it was a revelation to him. He had been especially interested in the possibility of making a porcelain jacket crown with one fusing.

DR. J. W. GALE (Cologne)

suggested that if Dr. Eppright had the material he might be able to give a demonstration in the clinic before the meeting closed. The subject was so technical that it was very hard to grasp from the reading of a paper.

DR. G. O. WEBSTER (Berlin)

said when Dr. Eppright accorded him the privilege of going over his paper with the idea of opening the discussion he inquired whether the audience would understand the proceedure, and he told Dr. Eppright he could hardly expect that, having regard to the technical nature of the paper. There were some things that were absolutely unusual in the technique of porcelain work. The method of procuring the prepared root, and the model, and the articulation was not so extraordinary, but there were two unique principles connected with the subject. In the first place there was a model of the tooth from which a mould was made, and when the mould was open a mould of the front and back of the tooth was obtained. Then Dr. Eppright judged, from the tooth sample from which he had selected his colour, the colour body of the tooth, and introduced the porcelain layer by layer, which was a very valuable addition to the technique of porcelain work. It was practically almost the same as the technique in the casting of gold inlays. A mould was made which contained a form necessary for the porcelain tooth, with an opening through which he introduced the porcelain in the same way that gold was introduced, and the porcelain was put in in layers under pressure. That meant that all the moisture in the porcelain was excluded and air and bubbles eliminated and an extremely compact mass obtained. After that the tooth was biscuited in the mould. The porcelain having been forced in under pressure had given a much more dense mass than could be obtained by ordinary methods. Some of the samples Dr. Eppright had shown were in the biscuit, but that would be hardly noticed. If one burnished a platinum cap over the end of a root for the purpose of making a jacket crown and attempted to make porcelain in the open there was always a danger of the drawing away of the edge of the platinum foil so that the adaptation was not perfect at the surface. When the mould was enclosed and the porcelain was forced in under pressure, the porcelain was being forced all the time up against the model and when finished the cap fitted perfectly. Dr. Eppright's method produced a much stronger crown than could be produced otherwise. Dr. Eppright had been too modest to say it, but it was interesting to know that all the appliances were the work of his own hands, and he thought the members would appreciate the fact that Dr. Eppright had put forward something new in porcelain work and something for which the members should be very grateful.

Dr. N. S. Jenkins (Paris)

expressed his great appreciation of the remarkable device Dr.

Eppright had shown and his profound belief in the increased strength which he obtained by pressure and by the exclusion of air and moisture. There was another very great advantage, namely, that the crown was practically fused only once.

Dr. Eppright

briefly thanked those who had taken part in the discussion.

DISCUSSION OF DR. GALE'S PAPER ON "SOME HINTS ON SUCCESSFUL BRIDGE WORK FOR THE BEGINNER."

Dr. W. M. Cooper (Frankfurt)

said he had known Dr. Gale's bridge work for a good many years and he thought one of the strongest points was conserving the pulp. Where possible, under all circumstances, it was necessary to preserve the pulp of the teeth. For pulps not in a healthy condition, capping was a very dangerous proposition. A bridge was never stronger than its abutments. A railway engineer who put the piers of his bridge on sand would certainly find them fail, and the same thing would occur with bridges if they were constructed on unsound abutments. With regard to grinding, there was no question but what small stones with a suitable grip were very important. In the use of the wheel Dr. Gale suggested water at blood temperature, but personally he himself liked cold water. His assistant stood by the chair and by the aid of a saliva injector kept a constant flow of cold water on the tooth. If water of blood temperature was used the friction generated by the rnnning of the engine would raise the temperature above blood, whereas with cold water there would be more comfort. The gingival fold he thought was a very important point. Too often bridges were uncomfortable and failed simply by crowding the gingival fold. There was no point of the gums more sensitive, and that would give more trouble than the little fold of tissue at the gingival margin, and that must be very carefully protected. With regard to the point of greatest diameter, he thought that when the bicuspids were passed it was necessary to go clear to the gingival margin, especially in the lower arch; the crown must fit carefully to the gingival border because the patient could not keep it in proper condition. In bicuspids it was different. He had seen a number of bridges that had given service for years where a good half of the tooth was exposed, the cap only passing the point of greater diameter.

That saved the patient a good deal of trouble and there was no question but what such a method gave perfect satisfaction. As to the point of contact, he thought Dr. Gale did not emphasize that enough. If the contact point were not on the proximal surface there was more trouble than would be had with natural teeth. Dr. Gale had said that his paper was principally for beginners, and he would certainly advise beginners to use nothing but plaster. Dr. Gale's years of experience had taught him that he could use compound as well as plaster, but the beginner should use plaster and obtain exact results without guess work. As to articulation there certainly should be no guess work there. The paper by Dr. Thiersch in Dresden was an excellent one on that point and the use of the anatomical articulator was beyond praise. With regard to scraping the models under the bridges, his own experience taught him that all bridges, however carefully built, settled a trifle, so that if the model was scraped in order to bring the point of contact on the gum tissue, in time it would be found the bridge had settled and there would be no end of trouble. As for shrinkage of spans, with the new process of casting, it had been the practice in his own office to model all spans of bridge work in wax, cast them in one piece, and solder the abutments. By that method there was far less shrinking. He agreed with Dr. Gale that it was not possible to overpolish a bridge unless the polishing weakened it by taking away material. The higher the polish the less chance there was for deposits to form on the bridge or for oxydation. It had been his own practice to fit a bridge in the mouth and let the patient wear it for a day to see if the articulation was all right, and then if any point had to be changed the bridge would be repolished, and an electric plating of pure gold put all over the work. He had found that bridges did not oxydize or irritate nearly so much as a bridge that had not been gold plated. With reference to using creosote on sensitive places, personally he always used nitrate of silver. A tooth thoroughly immersed in nitrate of silver solution was less likely to be attacked by caries should there be a leakage, and it thoroughly protected the tissue. With regard to waiting for setting, he did not quite understand what Dr. Gale meant by saying that the setting of the piece should not be postponed for a week or two. When the work was once started it should be pushed through to a finish as quickly as possible. He differed with Dr.

Gale as to setting a bridge entirely with cement, because there were a good many places where a bridge could be set to great advantage with gutta percha, which had the advantage that it could be removed. He had occasion shortly before coming away to remove a bridge which had been in the mouth for seven years; it was set in gutta percha and there was a bit of trouble with it. There were many places where a bridge could be set with gutta percha and no trouble whatever would occur; in fact there would be much more comfort. The gutta percha acted particularly well with teeth with large pulps where considerable grinding had to be done because of the small diameter of the neck. In setting bridges where pins were used in canals gutta percha should never be used in a large canal where the pin did not absolutely fit the canal, because the lateral strain in time would work the gutta percha from side to side and the bridge would come off. As to the elasticity of cement in setting, if it was condensed while setting a better result was obtained. In placing a bridge he put two or perhaps three folds of bibulous paper over the masticating surface and made the patient bite upon it and then used warm water to facilitate setting. That did not change the articulation and often avoided the necessity of grinding afterwards.

Dr. Kelsey (Marseilles)

asked what gutta percha Dr. Cooper used.

Dr. Cooper

said he used base plate gutta percha. He cut it, warmed it, and tried it in the tooth carefully, and then he coated the inside of it with a little eucalyptus oil which acted as a flux. The case should be seen a week or ten days afterwards because there was very often a slight excess of gutta percha exuding from the neck of the band and irritating the gingival margin.

Dr. C. F. Bödecker (Berlin)

said the paper was an excellent one on a topic which required a lot of thought. There were a great many mistakes made in bridge work and the paper would remind even the older workers of certain points which they unconsciously forgot. He should like to know whether Dr. Cooper in electroplating bridges would use electric plating for bridges on inlay abutments. The setting of bridges with gutta percha was a great advantage because they were easily removed if anything happened, such as secondary decay. Validol camphorata was an excellent thing to use in setting bridges with gutta percha. It had several advantages over eucalyptus, one being its sedative action on the pulp of the tooth and the abutment and another being that it dissolved the gutta percha until it became almost a very thick cream or thin putty-like mass. It also had a slight disinfectant action.

Dr. W. M. Cooper (Frankfort)

said he very seldom made a bridge with an inlay attachment as he did not believe in it. If he had a good, strong crown to support, and could have an inlay at one end, he would risk it, but he would not risk a double inlay attachment. Before setting he scraped the surface next to the teeth thoroughly with a very fine instrument. With regard to dissolving the gutta percha until it was of the consistency of cream, he always tried to avoid that, using the gutta percha as near to its original consistency as possible. He had seen cases where stuff was used to dissolve gutta percha for setting bridges and the gutta percha was porous and apt to become very nasty.

Dr. Kirk Davenport (London)

thought the paper was one of the most interesting that had been read for some time. It was well known that when Dr. Careful brought forward something which was worth listening to, another Dr. Careful in the shape of Dr. Cooper was able to add something to the discussion. He quite agreed with Dr. Cooper that the importance of gutta percha as a material for setting bridges was greatly improved by keeping it gutta percha. Liquid gutta percha in bridge work was a miserable substance because it was so far from being gutta percha. There was a tendency for the cases to become foul and also the bridges were difficult to fix. There was a little method of setting bridges and crowns with gutta percha which he had found most excellent. He took base plate gutta percha, held it in a flame, and stretched it into very thin sheets like tissue paper. Then it was wound round the pin to just the thickness required and there were no air spaces. By that method the minimum amount of gutta percha could be used, with absolute certainty that there would be no excess. By using a blunt instrument it could be stretched into a Richmond attachment; it did not go quite in place when it was in the elastic state, but it went into place when the bridge was put on and forced into the mouth on the wet root. He always considered it advisable to put the bridge into place once and then remove it, when it would be found the gutta percha had gone into place. The excess gutta percha was then removed and the surfaces moistened with eucalyptus or chloroform, not to obtain a liquid substance, but just sufficiently to lubricate, and the bridge went home easier in the majority of cases with gutta percha than even with liquid cement.

Dr. C. F. Bödecker (Berlin)

said he retracted what he had said about the gutta percha being absolutely liquid in the case of bridge work; he was thinking of other purposes. There was no doubt it was better to keep the gutta percha as gutta percha and not liquify it for the purpose of setting bridges.

Dr. G. O. Webster (Berlin)

wished to acknowledge the pleasure he had received from the paper. A man who had done bridge work for a number of years was always finding that he was increasing the strength of his abutments, and there was one little trick he had found especially valuable, particularly in making a molar crown where great rigidity was required. It was very hard to adapt the gold nicely to the cervical margin and he found the following method to be of advantage. The gold was made a little thinner and a band was made and burnished until it fitted perfectly to the gingival margin. Then the end was soldered or cast, preferably the latter. Then gold was rolled fairly thin, the band cut and wrapped round and attached to the wire, leaving an excess on either side; a drop of solder was then used in between. In that way a gold cap was produced of which the band was first a layer of gold, then a layer of solder, and then another layer of gold, and the cap was almost as rigid as a piece of steel. It was done very quickly indeed, and there was no possibility of the cap ever failing.

Dr. W. M. Cooper

said that in his method, after he had everything thoroughly dry, he took a little gutta percha cone of the proper length of the canal, and passed it into the canal and with a warm instrument attached it, and built up a triangle of three gutta percha points in the canal. When the bridge was warm he held the bridge over the spirit lamp and then passed it up the canal. The three gutta percha points were softened by the warm pin and were distributed completely over the canal, and the excess, if any, came down and united with the gutta percha which had been fitted to the band of the bridge. Often he had had to try bridges on two or three times, owing to the discomfort when the bridge perhaps was too high and too much force had to be used to set it. By using the gutta percha points there was no danger of over-heating the gutta percha over the lamp. Overheated gutta percha was quickly destroyed.

Dr. C. J. Monk (Wiesbaden)

thought an apology was due to Dr. Gale because the discussion had gone somewhat wide of the subject of the paper. It was twenty-one years ago that the subject of fixing of crowns and bridges by gutta percha was first brought forward to the society in a paper by Dr. Mitchell, and since then many members had used the method with very great satisfaction. Dr. Cooper's description of his method of setting gutta percha should be taken with a grain of salt—each man had to work from his own point of view. There was nothing more difficult and trying and distressful sometimes than to set a large bridge with gutta percha. The difficulties were so great that he had often had to try in a crown three, four, five or six times before getting the excess away, and it was absolutely essential to the proper set of a bridge that there should be no excess. He thought it would pay the beginner to start with gutta percha on a small affair and see how it worked. It required a great deal of study and experience, but would be found most satisfactory and would repay in the end. For instance, when a crown had a broken facing it would be found that it could be taken out and repaired and put back in half an hour. Gutta percha could not be used with an inlay bridge. The bridge which gave most satisfaction with gutta percha was the open face bridge, especially in young mouths where the saliva had a deteriorating action upon cement. There it was absolutely essential a bridge should be set with gutta percha.

Dr. A. N. Davis (Berlin)

said in setting a bridge with gutta percha, particularly when there were pins in the root, it was well, after trying on the bridge and getting the gutta percha squeezed out as far as possible, to put a little cement into the root canal and also on the other abutments. The cement should not be put into the bridge with the gutta percha when it was warm, because the cement would set very quickly; the cement should be put into the roots and over the abutments and then the bridge warmed and put on with the gutta percha. In that way a perfect covering was obtained for the root. Also the bridge could be removed very easily by warming it afterward, because the pins and the abutments were covered with gutta percha. Those who wished to get teeth with live pulps covered with gutta percha could not use the cement, but in one or two failures where he had set bridges with Evans' crown and bridge gutta percha cement he was quite surprised after several years to find decay had taken place under the abutments and he thought he would try a cement combination. He put the cement into the abutments when the bridge was warm and in trying to put on the bridge found the cement had set. Now he put a thin layer of cement over the abutments and squeezed on the bridge when it was warm, and in that way had not to be so careful in having the crowns and pins thoroughly filled with gutta percha; in fact, a little less gutta percha could be put in than would be the case if gutta percha was used alone. All that was necessary in using cement was to get the crowns thoroughly covered with gutta percha and make the rest up with cement. It was simply done as a means of taking off the bridge without having to destroy it.

Dr. G. B. Hayes (Paris)

said it was very interesting to see how many beginners were at the meeting, and as a beginner himself he thought there were three points necessary for a successful bridge; first, its appearance; secondly, sufficient strength to do what it was intended to do, and thirdly, ability to keep clean. If a bridge failed in any one of those particulars it would fail altogether. He thought most of the points had been covered except one, and that was the proper consideration of the mouth in which the bridge was to be placed. It was often necessary to educate a patient in the keeping of the bridge clean. There might be two mouths where the local conditions as far as abutments were concerned were almost identical, but one patient might appreciate and take care of a nice piece of work and the other would be careless and as long as it was comfortable pay no attention to it. The aphorism he would give to bridge workers was, "Cast not your pearls before swine."

Dr. E. Sturridge (London)

said cement was very useful at times and he could more often set a bridge with cement than with gutta percha. He should like to know whether Dr. Gale ever used oxyphosphate of copper and also what pins he would advocate. Would an abutment or even two abutments be made strong enough by making inlays for the crown surfaces with pins and taking out the pulps and allowing the pins to go down?

Dr. S. S. MacFarlane (Frankfort)

said Dr. Gale spoke of removing bridges set with cement and he should like to know how that was done. Also he spoke of grinding a tooth by holding the loose tooth with his fingers. Sometimes it was useful to tie the tooth up with floss silk or put a little impression material between the teeth and cool it with water.

Dr. W. F. Kelsey (Marseilles)

said with regard to Dr. Gale's remarks as to the necessity of leaving a slight interval between the artificial teeth or the bridge and the gum, he should like to know what he thought of the system of complete separation. The dummy might be perhaps ⅛″ in thickness with a complete separaton between the dummy and the gum so that it could be cleaned with the tongue. He had seen a good deal of such work, but did not appreciate it himself.

Dr. Gale

in replying to the discussion, said he wrote the paper really for beginners. At first he sketched the paper, but as he came to look over the headings he found he had prepared to write a book. Accordingly he threw the sketch away and started to write on a few points he thought really essential to a successful bridge, and that was the proposition he had started out with. Everyone must use what he found most successful in his own hands. He fully agreed with a good deal that had been said about gutta percha, but for the beginner gutta percha was one of the most difficult things in practice to use successfully. A man who could use gutta percha could build a gold filling on the end of a man's ear. He heartily agreed with Dr. Davis's suggestion for covering a pin with gutta percha and perhaps the base of a cap, taking it for granted that it was a porcelain covered cap for an abutment. He applied that method very often in the case of a bridge he suspected. He coated the pin with a bit of gutta percha, not enough to allow the bridge to become loosened, but sufficient to allow the bridge being removed. By splitting the band and spreading it out a little bit, and by heating the bridge very hot and passing an instrument under it, he could remove it quite as quickly as he could a simple gold cap. Many times patients came to him with their mouths so sore that it was impossible to slit the crown. In such cases he took a very thin carbo-disc and cut the crown right in halves, a thing that could be done within a couple of minutes. If the anterior end of the bridge was fastened with gutta percha, by heating the band and the pin very hot the job could be done in fifteen minutes. It was no good temporising, because if one man was not prepared to do the work there was always someone across the street who knew just how to do it.

DR. CUNNINGHAM

said when a bridge was set at both ends with cement and at one end with a pin it would be difficult to get it out in fifteen minutes.

DR. GALE

said he rarely used three foundations for a bridge.

DR. MACFARLANE

asked what Dr. Gale did when there was a gold cap at one end and a Richmond crown at the other, both set in cement.

DR. GALE

said he rarely set a pin without putting gutta percha on. All the speakers in the discussion were experts in gutta percha, but the young man had to learn something before he became an expert. After fifteen years, if he worked very carefully, and had learnt all about gold and porcelain inlays and crown work, he would still be learning something about gutta percha.

DR. DAVIS

asked whether in setting a Richmond crown with a pin in gutta percha, cement was also used.

DR. GALE

said that was so. After fitting a pin with gutta percha into the root he naturally set the bridge with cement at both ends; it was a combination of gutta percha and cement. He thought Dr. Sturridge's suggestion of oxyphosphate of copper was a good one. He had left out many points that he himself adopted, having regard to those to whom the paper was addressed. With regard to Dr. Kelsey's idea of spaces in bridges, in careless people he would leave nothing but the chewing surface. The food would be washed out at the next meal and no great damage be done.

ILLINOIS STATE DENTAL SOCIETY, MEETING AT SPRINGFIELD MAY 14-17, 1912.

DISCUSSION OF THE REPORT OF THE PUBLIC SERVICE COMMISSION.

Dr. C. N. Johnson (Chicago)

was asked to open the discussion. He said: Mr. President and gentlemen: I have nothing to say on this report except to commend the energy and wisdom of the chairman of the commission. I happened to be in such relation to him as to give me an insight into the amount of energy he has used in carrying on this work. I do not believe it is possible for any single member of this society to realize all of the detail that has been necessary on his part. But if you are in the habit of writing letters, you could at least get some grasp of the situation when he announced that he has written more than two thousand letters in the progress of this work. I believe that Dr. Logan and those who have been associated with him in any way are willing to stand on the record that has been made. I have said before in this society that in an educational campaign there were various methods which should be inaugurated to bring the matter of oral hygiene before the people. One of these methods was through the medium of public lectures, another the public press, and so on. I feel, Mr. President, that the year we are just closing has been one of the most fruitful years in advancing education of the public in regard to oral hygiene, and we may well be proud of it. I cannot avoid saying this, that whenever this society takes hold of anything it is done well. We have the best workers in this society of any with which I am familiar, and it has been my privilege to attend meetings of various societies. I am wonderfully proud at this time of the record that has been made by our public service commission.

Dr. Geo. D. Sitherwood (Bloomington)

I rise to apologize for that part of the report with reference to Bloomington, and for the small attendance at the public meeting in Bloomington. I put forth a great deal of effort, as a local member of the society, to have a large attendance at that meeting, but for some reason the press and the public got the impression that it was an attempt to exploit our local dental society. They had the impression that it was the McLean County Dental Society that was running the whole business and not a disinterested effort on the part of a number of dentists to educate the public. At the same time I would state that that impression has been partly corrected. Just how they got that idea I am not able to say, but that is the real fact in the case. I am fully impressed with the value of this work, notwithstanding it did not appear to work well in Bloomington, and there is no work that the society is undertaking at this time that is of more importance to my mind than this, and I hope it will continue and that in the second attempt Bloomington will do better.

Dr. C. B. Warner (Urbana)

As a member of the public service commission I wish to say that the honor for this work rests largely with Dr. Logan. While the rest of the committee worked, the ideas presented originated with him and it was his energy and enthusiasm that pushed the thing through. I wish to say, also, that if Dr. Logan pursues this work another year it will show up more than it does now, because it is a work that requires experience. Dr. Sitherwood need not apologize for Bloomington, because that lecture came early in the season and we did not understand the correct procedure until later. We picked up points at Joliet, Urbana and Bloomington; we put them into operation in cities like Belleville and other places, and they brought results. I wish to say at this time that you cannot give Dr. Logan too much praise for the work he has done.

Dr. Arthur D. Black (Chicago)

In view of the fact that this report is being discussed I presume Dr. Logan will be asked to make some closing remarks, and it would be interesting to the members of the society to have him say something of his ideas as to how this work should be carried on in the future. We have necessarily during this year only just skimmed a little off the top. I do not say that in any way derogatory to the work of the commission, but to emphasize the fact that the whole proposition is very large. This is the first year that we have begun to really get hold of the thing at all. We must in the future work out plans which will carry this work into more definite detail. As an example of what I am trying to convey in this I would call attention to a fact which I think we must readily recognize, that very few of us have ideas that would be like those of others as to the instruction that we should give patients in the office as to the care of the mouth, as to what types of tooth brushes are best to use, the best way to use the brushes, and of what value, if any, there is in mouth washes and tooth powders.

We are sending lecturers out to the various towns in our state and these lecturers are telling our people that if they take proper care of the teeth they will not have trouble. Naturally these people go right back to their own individual dentists and ask them, How are we going to do these things? The lecturer, they say, told us to do so and so, but he did not give us the details. There is where we have the opportunity to do our best work. The individual dentist should give information that is right, and that is one of the phases of the work which ought to be worked up by a central committee, giving proper consideration to the views of many men, so that we wll have these things in definite form. We must develop a system of team work between the lecturer, the local society, and the individual members of the local society. I would like to have Dr. Logan say something in closing as to what may be accomplished in the future.

Dr. Geo. D. Sitherwood (Bloomington)

I forgot to mention in my previous remarks that if the public lecture could have been given in my own city at a different date than at the time of the meeting of the McLean Dental Society there would have been a much larger attendance. I am sure of that and I wanted you to know that fact.

Dr. C. M. Meade (Carmi)

I cannot let this opportunity pass without thanking Dr. Logan for what he has done in our community. In this connection I would like my wife, Dr. Mary B. Meade, to say a word in behalf of the work that has been accomplished by Dr. Logan in Carmi.

Dr. Mary B. Meade (Carmi)

I can fully confirm and endorse what the previous speakers have said with reference to the splendid work that has been done by Dr. Logan, and I thank him for it. There is no one who has not been in it this year who can appreciate the valuable work that has been done and its magnitude, because they cannot know. I have been deeply impressed with the promptness with which he has answered letters. If you wrote Dr. Logan a letter today you would invariably get a reply the next day. That gave an inspiration for each one undertaking the work to follow the instructions of the man at the head of this movement. I believe the greatest work before the dental society is that of educating the pupils of our public schools. We cannot hope to reach many of the older heads, but we can reach the youths who are the fathers and mothers of tomorrow. I feel that we have begun in the right way, and yet, as Dr. Black has said, it is only the top has been skimmed off. We must push forward and each little society in Illinois should do its part, and with combined efforts we can do the greatest good that has ever been accomplished by any society or by any profession in the world, and I do not believe there is any society in the world that is as capable of doing this work as the Illinois State Dental Society with Dr. Logan at the head.

Dr. G. W. Dittmar (Chicago)

I feel I would not do my full duty to my friend Logan if I did not say a word. I know what Dr. Logan has done for the Illinois State Dental Society, as well as for the Chicago Dental Society. To me he is a marvel. I believe there is no better organizer in the society. Very shortly after he was appointed on this commission he had an outline of what he intended to do. He organized the commission and you know what has been accomplished. There is one other phase of the subject which I want to talk about and that is the thing that was mentioned here this morning, namely, not to educate the public too much, not that we can ultimately educate them too much, but there is danger that the rank and file of our profession will not keep ahead of the laity or even keep pace with them. The thing to do is to educate the dentists, so that they will be able to answer questions intelligently.

The next thing to do is to get still closer to the medical profession. That is one of the wisest steps to take. When Dr. Logan started, in the first meeting, he had the audience entertained by papers from physicians. That certainly was the logical thing to do, for we must get the medical profession interested and impressed so that they in turn will invite men from our profession to present essays to the medical societies. I want to thank Dr. Logan and the other members of this commission for what they have done and I hope the same men willl be continued in the work for another year.

Dr. J. P. Buckley (Chicago)

I know how much work Dr. Logan has done. I would like to repeat all of the good things that you have said about him and his work. I would not encourage you to keep him on this commission for another year, because we think too much of Logan, and if you do, you are asking too much.

Of the lecturers I probably had as peculiar an experience as any of you, inasmuch as I was one to deliver a lecture under the auspices of the other committee. I mention this not in a derogatory spirit, because I am a member of the other committee, but to show you how method and system counts in getting an audience. I went to Kankakee and I was to lecture there before the Woman's Club at three o'clock in the afternoon. I got there on time and they took me to a little anteroom and kept me there until it was almost 3:30, and I was to catch the five o'clock train to go back to Chicago. I was very anxious to begin the lecture and I told the dentist who had the matter in charge that I was ready. But he kept me in that anteroom for half an hour. The reason was that there were only a few women in the room to hear my lecture and the chairman of the Woman's Club regretted, as did also the dentists present, that no more were there. They got busy on the telephone and in a short time got an audience of fifty women and one minister. I shall never forget the minister. He looked as though he would like to stay for about five minutes to please the women, but after about five minutes he took off his coat and stayed until the last word was uttered, after which he introduced himself and said he was the Methodist minister of the town. This was my experience at Kankakee. The women to whom I lectured there were very much like freshmen students. I could hardly get out of the hall after my lecture because they thought every child in town was doomed, and they wanted my system of correcting the defects or the troubles of these children, so that they could get school inspection the next day. (Laughter.)

At Dixon, under the auspices of the public service commission, we had an audience of eleven hundred. Dr. Logan had the newspapers well in hand and the meeting was well advertised. It is only in this way that we can get a large audience. He gets an audience because he interests the parents of the children. If the parents feel that they are not specially interested in the lecture they want to hear their children speak or sing, and by getting the children the parents will attend the lecture. It seems an undue advantage to take, but nevertheless Dr. Logan gets a crowd, and all of us like to speak to a full audience and not to empty benches.

Dr. Logan (closing the discusson):

I want to thank you very kindly for what you have said about me and my work. What Dr. Black has said is largely true, namely, we have just scratched the surface a little. He knew I would understand what he meant when he used that expression, yet I wish to agree with Dr. Dittmar, that we have at least taken a slice off of the top. However, one thing we must do above all other things is to go slow and with method and in the gradual progress we shall grow stronger.

Dr. Buckley has said that the members of a certain Women's Club, after listening to his lecture, desired school inspection at once. One of our troubles has been that after some of the lectures had been given, the people went to dentists and asked for more information in regard to the value of this movement, and I am sorry to admit that in some instances they were informed there was not much of real value in it. Therefore, we must educate ourselves a little in advance of the giving of instructions to the public. This year I would suggest that the Post-Graduate Committee take up the question of oral sepsis and its influence upon the individual. Many articles have been written this year, and a number more will appear in the early fall. At the National Dental Association's meeting, to be held in Washington in September of this year, Dr. H. W. Wiley, the man who was chief chemist of the Bureau of Agriculture, is to give a lecture upon the "Influence That Impure Foods and Adulterated Drugs Have Upon the Individual." This is to be an evening public meeting. He is to lecture from eight until nine o'clock. Dr. George E. Hunt is to follow him upon "Teeth and Health." We wish to learn what Dr. Wiley has to say and we have no objection to Dr. Wiley's waiting and listening to Dr. Hunt's address, because we believe he will be pleased to hear what Dr. Hunt has to say in reference to the influence that the carrying of pure foods and pure drugs through a diseased mouth has upon the individual.

There will be many good articles read on oral sepsis before the various state societies this summer and these will appear in the dental journals in the early fall and winter. Our Post-Graduate Committee should select the most authentic ones and base the year's post-graduate work for local societies upon these. The first program in the fall for those districts that had a physician appear before them during the last year should deal with oral sepsis. The speaker believes that the immediate success of this movement depends in a very large measure upon having every local society in the state, some time during the year, consider this question of oral sepsis.

The first thing above all others that must be taught when discussing this subject is its diagnosis and the best methods to secure permanent control of this septic condition. This subject should be taken up annually by every local society for the next two or three years. If this plan is followed systematically throughout the state, the members of our profession will have a much clearer idea of the importance of the subject and will also know how to properly care for these cases when they present for treatment.

Our best practitioners of medicine are examining the mouths of their patients for septic foci, and if found they are referred to the dental profession for treatment. If as a profession we are not competent to give them the proper care, we will be placed in a very embarrassing position, for the reason we have already been informing the public for some time that such conditions are very injurious to the individual's health. We as a profession must cease informing our patients that the chronic abscesses about root ends with discharging sinuses are of little consequence and do no harm, and that the pus escaping from pyorrhea pockets does not have a very definite and serious effect upon the general health of the individual.

We must inform the public, by example, as well as by statement that we know a chronic septic condition of the mouth is a more serious state of affairs than that produced by the loss of many, if not all, of the individual teeth. In other words, if the chronic septic process cannot be cured by leaving a tooth in position it is wiser to extract for its control than to leave that tooth and allow that chronic process to continue.

After we have educated ourselves on the diagnosis and treatment of septic conditions, our next move should be to send our best trained speakers before the various local and state medical societies and have them discuss oral sepsis from its broadest standpoint. The work the commission is now carrying on in this state cannot be stopped. If our funds will permit, we must go into many new districts this year, also in some instances return to the districts we gave lectures in last year and hold public meetings in some other towns before the same societies.

Dr. Sitherwood has stated that, if the meeting held in Bloomington had occurred on some other day than when the dental society held its session the attendance would have been much larger. The reason for holding the dental meeting the same day as the public lecture is for the purpose of getting dentists from the entire district to attend the public lecture, for it is the commission's opinion that the members of our profession need the information and enthusiasm furnished by these lectures as much as the public. We should never have a public lecture held under the auspices of the local dental society. The lecture should be held under the auspices of the women's club, the Board of Education or some other directing head.

In closing I wish to state that in my opinion the chairman of the commission should never continue in office for more than one year, for the reason he will die of dry rot.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The semi-annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois, will be held at the Northwestern University Dental School, corner Lake and Dearborn Streets, Chicago, beginning Monday, November 11, 1912, at 9 a. m.

All applications, together with the fees, twenty-six dollars ($26.00), must be filed with the secretary at least five (5) days prior to date of examination.

Address all communications to T. A. Broadbent,
705 Venetian Building, Chicago, Ill. Secretary.

THE DENTAL REVIEW.

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PUBLISHED MONTHLY

EDITOR C. N. JOHNSON, M. A., L. D. S., D. D. S.

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THE RIGHTS AND ETHICS GOVERNING THE PUBLICATION OF SCIENTIFIC PAPERS.

From time to time it seems necessary to call attention to the rules which govern the publication of papers read before societies, and also those papers which are submitted for publication without having been read before a society. The authors of articles frequently make mistakes unintentionally through a lack of understanding of the ethics governing this matter, and in some instances it is not beyond belief to suppose that authors have sought to secure the publication of their papers in several journals at the same time without notification to the various editors of this intent.

For instance, this may happen: A dentist has written an article which he deems of great interest to the profession, and he is anxious to get it published without waiting to read it before a society. It is perfectly proper for him to submit it to any one of the journals which he may select, but it is manifestly improper to submit it to several journals at the same time without any intimation that he is sending it to more than one. This has too frequently been done, and it is wrong Some of our journals have a standing rule not to publish matter which has already appeared in print, and it is an unjust advantage to take of such journals to send them articles which are to appear elsewhere.

The rules governing society papers are these: The moment a paper is read before a society it becomes the property of the society, and should have its first publication through the pages of the journal which the society selects as its official organ. After that it may be copied by as many journals as care to use it—provided due credit is given to the journal first publishing it. But after the paper is read before a society the author has no right to submit it to any other journal than the official organ of the society, because it is no longer his property. Neither has he the right to send his paper to any journal for publication between the time when he has consented to read it and the date of its reading—which would be manifestly unfair to the society.

No man should read a paper before a society which he has already presented to another society without a perfect understanding of the fact on the part of both societies. Sometimes there is a subject of such transcending interest to the profession that it is permissible to present it before more than one society, but this should never be done surreptitiously.

The aim on the part of some authors to get their articles before as many people as possible often leads them to use means for this purpose which are not in accordance with the rules governing these matters, and editors are frequently duped and readers as frequently disgusted by the duplicate appearance of articles which by right and title should appear in only one journal.

One of these days some editor who has been imposed upon in this way will come out with specific facts regarding specific cases, and when he publishes all the details it will not make very pleasant reading for those implicated.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS.

ANOTHER VACATION STORY.

It is a wonderful thing to have friends. In the August number of the Dental Review I announced a proposed journey to Australia and New Zealand, and promised to write it up for my readers. I find it quite impossible in these vacation stories to avoid introducing the personal note, and it is only fair at the outset to warn those who object to the introduction—I might say the intrusion—of the personal element into articles descriptive of travel that they would better save themselves the annoyance of attempting to read the present series. I must write in my own way or not at all, and the reason I am inclined to throw in the lighter touches of my personal experiences is because I do not take the articles seriously enough to hope that they will contain anything of permanent value. If I can succeed in lending a meagre bit of interest to the passing hour I shall be content.

Speaking of friends reminds me that I never before realized how many I had or how comforting they were. A few evenings before I was to leave Chicago I was inveigled down town for dinner, ostensibly to meet a man who was to do something wonderful in the way of contributing to a fund for caring for the teeth of the school children of Chicago—a movement in which I have for some time been interested. Dr. F. W. Gethro met me at my office and escorted me over to the University Club, where I was to "meet the man." The room was dark as we stepped to the door, but presto! up went the lights, and there I saw sitting around the table about twenty of my friends, all smiling audibly at my confusion and chaffing me about getting that fund. I never knew before that Dr. Gethro was such a star prevaricator. Not till that instant did the hint of a dinner from my friends dawn upon me, and I was caught completely off my guard. Well! before the evening was over I was handed a beautiful Zeiss field glass, with the request that I write up all the things I saw with it on my trip, and I have been "seeing things" constantly ever since that night.

The day we left home to begin our long journey many of our friends called up by phone to say good-by and some of them came to see us off. Dr. and Mrs. T. W. Brophy, Dr. and Mrs. Bromley Allen, and Dr. and Mrs. Gethro "happened in" at the opportune moment, and as we rolled away and left them standing in front of our home waving us good-by it brought a lump to my throat which lasted longer than I would willingly admit—and it was not from sore throat, either. As we motored down the Sheridan Road and through Lincoln Park I remarked to my family that we were not likely to see any more beautiful sight than that on our whole trip. The day was superb and the Pioneer Limited soon had us out among the green fields—the kind of green that only the month of June can produce.

The next morning we were awakened in St. Paul, and after breakfast we stepped up to the N. Y. Life Building to shake hands with my friend, Dr. E. K. Wedelstaedt, who was not aware that we were coming. When he opened the reception room door and saw us sitting there he exclaimed: "Hol-ee J-u-p-i-t-e-r!" And then turning to his office assistant he said: "Belle, cancel all my appointments for the day." I protested and told him he must attend to his patients as usual. "The patients can go to the ——," he said. If any of my readers think that I am going to tell where Dr. Wedelstaedt consigned his patients that day they are mistaken. He is a man who thinks a very great deal of his patients, so it may be taken for granted that they were not sent to any very terrible place after all. The day was spent in motoring up and down the river along the bluffs of the beautiful Mississippi, and at 5 p. m. we boarded the train for Winnipeg, Manitoba.

Here I must pause and catch for breath. It was about eleven years since I had spent enough time in Winnipeg to look over the city, and in that time a miracle had been wrought. It was then a city of about 40,000, and had some mudholes in it. Today it is nearly 200,000 and a metropolitan center in every respect. I was amazed and charmed. Think of one railroad yard with an aggregate of 120 miles of tracks. That is the track capacity of the C. P. R. yards in Winnipeg, and it is not enough. They are planning another yard a short distance out with an equal or greater capacity. In this big, broad western country they have forgotten how to do things in a small way, and the world will do well to keep its eye on the plains of the great Canadian northwest.

In Winnipeg I was given a luncheon and our party was entertained till we begged off. Hospitality is a leading characteristic of the people of this part of the world, and I wish I could recall the names of all those who contributed to our enjoyment. If you ever go to Winnipeg just call on Drs. Mathison, Campbell, Taylor, Greenfield, Bush, Clint, Garvin, Walsh, or—just call on any of the men up there and I will vouch for the rest.

It was at Winnipeg that I received an impetus to do better work on this vacation series than I have ever done before. Sometimes I have had my doubts about the propriety of publishing such articles in a dental magazine, but after this I shall go ahead. I find they are read more generally than I had supposed. I stepped into Dr. Mathison's office and told the young lady to say to Dr. Mathison that there was a lost tramp out there to see him. When he came out she noticed that he had seen the tramp before and was naturally curious to learn who he was. When she heard the name she immediately asked if I was the chap who wrote the "Editor's Desk" in the Dental Review. I then learned that she was in the habit of wasting her time reading all my vacation articles, and I am led to suppose from this and other like incidents that many of the office assistants are doing the same thing. I have always had more respect than the average man for the office assistant, and so after this I purpose trying to make these articles entertaining. Some day I shall write an appreciation of the young lady assistant, and when I have summed up her many admirable qualities she will henceforth be immortal. Heaven bless her—she deserves immortality—without her the average dentist would be a poor, miserable, helpless creature.

Our final entertainment at Winnipeg was to witness the moving pictures in color of the recent Durbar ceremonies in India when King George was crowned. I wish I had space to properly describe this spectacle, which was most imposing. Suffice it to say that no one can witness it without being impressed with the wonderful colonizing efficiency of England, when the "right little, tight little Isle" can so influence the powerful princes of far-away India that they come one by one in all their pomp and glory and bend the knee to the reigning sovereign of England. What matters it that one of them petulantly refused to back out of the royal presence, but turned and walked away after having made his obeisance? The fact remains that he came and made the obeisance, and that he afterward apologized for having turned his back. England has taught the world a lesson wherever she has planted her flag. The Union Jack has always stood for the maintenance of law and order, so far at least as it is possible with our present civilization to have it maintained. Witness, for instance, the mounted police system of the great northwest in Canada. Think of the territory they patrol, the possibilities of outlawry in that immense sweep of sparsely settled country with its heterogeneous population, and then study the records and observe the relative freedom from serious crime. We saw these sturdy redcoats at intervals all along the line from Winnipeg west—quiet, gentlemanly, reserved, and immensely resourceful.

I had planned to say little of our trip from Winnipeg to Vancouver, having once before written this up for the Dental Review, but I found myself obliged to capitulate. We stopped at Banff, a most beautiful spot, but the crowning glory was Lake Louise. Here I pause a moment in my writing, close my eyes, sink into a dream and live over again the luxury of gazing upon that enchanted region. I am glad I am not *blasé*. When I got so that the beauties of nature do not affect me and make me catch for breath, when I can look at a spot like Lake Louise and not grow enthusiastic, and rave and babble about it to my friends, when I have succeeded in developing such a superiority and *aplomb* that I can observe with calm and proper indifference the spectacles which nature has spread out before me, then I want to die. When I get perfect control of myself then I shall have no further use for myself.

Lake Louise—Glacier in the Distance.

Laggan station, where one leaves the train to go to Lake Louise, is forty miles west of Banff. The lake is about three miles from Laggan, and the drive up the mountain is beautiful. It is also a very stiff climb for the horses and there is little doubt that they will be glad when the electric railroad which is now being built to the lake is completed.

You have all doubtless seen pictures of Lake Louise and have thought that they were highly colored for effect, but when you stand beside that marvelous body of water and watch it in its varying tints you will declare that it is impossible for man to magnify its beauties. I shall not try to describe its colorings because I have never yet seen an adequate portrayal of nature's brilliant and changing hues when reduced to the dead level of black ink on white paper.

It is a bonnie bit of water a mile and a half long and less than half that width, nestled in a pocket in the mountains to a depth, I am told, which has never yet been fathomed. Along the sides of the mountain above the lake trails have been built and it is an exhilarating climb to walk over them. In some places they are far up the mountain side with a very steep declivity below and a sharp bluff above. They are comparatively safe to walk upon if one is careful, though a young American girl accidentally fell over one last summer and was killed. The place was so precipitous that they had to make rope ladders to rescue her body.

It was the eighth of June when we were there and in some places they had been obliged to shovel the snow from the trails to admit foot passengers. In one spot we walked between snow banks six feet high. Above Lake Louise in another pocket is Mirror Lake, and yet farther up Lake Agnes, which was still frozen over. They had a snow fall of several inches all through this region less than a week before our arrival, and our driver told me that he looked for another snowstorm inside of twenty-four hours. On the eighth of August one year a guide was caught in a terrific snowstorm higher up the mountains, and had hard work getting out. It may therefore be inferred that the season up here is very short, but it makes up in intensity what it lacks in length.

The Canadian Pacific Railroad has built a beautiful hotel at Lake Louise. It was originally called the "Chalet Lake Louise," but now it is enlarged and has graduated into the "Chateau Lake Louise." To sleep one night at the Chateau is to taste of heaven. The season had not opened when we were there and they were not accepting guests at the Chateau, but I had set my heart on staying up there in the clouds that night, and so I approached the room clerk at the desk. "No use," he said. "It can't be done. We have instructions from the manager not to take any one till the 10th." I asked where the manager was. He could not tell me, but pointing to the head bellman said that he might know. I found this head bellman a very decent sort of chap, and I talked long and lovingly in his ear. Then I sent both clerk and bellman to the manager with the most alluring Chicago story I could invent—coupled with the implied threat that if they did not succeed I should insist on seeing the manager myself. Well—we slept that night at the Chateau, and not only that but we occupied the most sumptuous suite in the place, looking directly out over the lake. And when I tell you that, I tell you something wonderful, because this same Chateau is a marvelously beautiful and artistic spot made homelike with great open fireplaces holding almost as many logs as an ox-team could haul.

Chateau—Lake Louise.

I wish I could describe the twilight and the sunrise we witnessed from those windows. It remains light up in this region in June till between nine and ten, but long before this the sun said good-night to us in a pink ball through a notch between the highest points of two enormous peaks. It was indescribably grand, and yet in a way it was as nothing compared with what the following morning brought to us. I was so alive to the beauties of everything about me that I awakened between four and five o'clock, and as I sat up in bed and looked out the window I found it difficult to realize for a moment that I was still on earth. The sunlight was just bathing the distant snowclad peaks in the softest, rosiest, haziest, mistiest, hues that ever held a mortal in breathless suspense, while in the darker shades down near the water line the wild green mountain sides were mirrored deep in the glass-like surface of the lake. It was such a glorification of the sublime in nature that I never expect to outlive its thrill, and I trust that I shall always be a better man for having seen it.

Go and look at Lake Louise—I cannot describe it.

[To be continued.]

PRACTICAL HINTS.

Edited by J. E. Schaeffer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, The Dental Review, 55 State Street, Chicago, Ill.)

Save Your Tooth Brushes:—Save your old tooth polishing brushes. They come in handy for cleaning off gold inlays after casting.—*R. G. Joslin, D. D. S., Minneapolis.*

Save Your Burs:—When a cross-cut fissure bur becomes too dull to cut well, its usefulness can be in large measure restored by breaking off the end of the bur about half way toward the shank. (The tip of such a bur always is much duller than the portion near the shank and this simple removal of the dulled tip allows the sharper portion to be used before the bur is finally discarded.)—*Arthur G. Smith, D. M. D., Peoria.*

How to Cure an Alveolar Abscess:—This can be done in one treatment after the canals have been thoroughly cleaned. Take a smooth wire broach, wind a few strands of cotton around the point, then force through the apices (if there is any pain it will relieve same at once) the following:

Creosote (beechwood), ½ oz.
Iodin tincture, ½ oz.

For anterior teeth substitute guiacol for iodin.—*Chas. H. Wachter, Girard, Ohio.*

The Use of Formalin:—Sometimes when we reset a post crown or provide a new one to replace it, unless the old root canal filling is removed, conditions made sterile and then refilled, we find such a tooth abscessed later. To prevent this just *moisten* the canal with 40% formalin, and set the crown.

Also at times a very painful condition presents about the apical tissues which persists in spite of all root canal treatment. I find excellent results to follow the sealing in of a very dry dressing of 40% formalin for a period of two hours only.—*A. G. Loomis, D. D. S., Chicago.*

Single Crowns:—For the ten or twelve anterior teeth, or all teeth within the range of vision, where porcelain is demanded, the all-porcelain replaceable or interchangeable crown, *with cast base,* and with or without a band, as the requirements may indicate, is used in a very large percentage of cases. It is undoubtedly the strongest, most artistic, and most universally applicable type of substitute for the natural tooth, and in all respects is second only to a skillfully adapted "jacket" crown. Indeed, for the average dentist it is better and more quickly and easily made; and, moreover, it possesses an advantage over the latter in that immediate replacement in the event of mishap is possible.—*Hart J. Goslee, B. S., D. D. S., Chicago.*

Root Preparation:—In preparing a root for a shell crown I do not cut it down low as I formerly did; in fact, if it is already badly broken down I build it up with alloy, sometimes with an inlay, to such an extent that it almost articulates with its opponents in the other jaw, and it is after I have done this that I start my operation of trimming it at the gingival as already described. In my further preparation I grind and trim the root with a decided slanting inward form from the gingival towards the occlusal surface, and my reason for doing so is that it is quite unnecessary for the band to embrace the root except at the gingival border, and the proper fit at this point is much more likely to be accomplished when the root is formed in this manner than if it is formed with walls straight up and down or as is some times termed parallel.—*R. J. Cruise, D. D. S., Chicago.*

Infection Through Alveolar Process:—Infection may occur through the alveolar process even where the teeth have vital pulps. Deposits on the roots of teeth act as irritants and the soft tissue becomes detached. The impact of food in mastication forces the bacteria into the tissues. We do not refer here to so-called "pyorrhoea pockets." The mouth may be in good condition; every tooth may be vital and solid. The deposit of tartar may be limited to one surface on a single root. Here again we may see a haematogeneous infection, in cases where tartar forms on the root and the gum tissue remains firmly attached to the pericementum. There is usually, however, some point where the gum has become detached. The suppurative process is usually limited, but may be extensive. The irritant is frequently overlooked and recurrent abscesses develop. It is no less necessary to remove the tartar than to remove a putrescent pulp, both being responsible for infection.—*F. B. Moorehead, M. D., D. D. S., Chicago.*

Opening the Antrum:—If the teeth can be saved, the operation should be made by making a semi-circular incision through the mucous membrane and periosteum, extending from the first bicuspid to the second molar convexity on a line with the floor of the antrum which corresponds with the duplicature of the gum tissue and mucosa of the cheek. The mucosa and periosteum are now separated from the bone and elevated with a periosteotome, exposing the bone. With a trephine or bone bur, cut directly through the thin bony wall at a point above and between the roots of the second bicuspid and the first molar, directing the cutting upward and backward—enlarging this opening with a fissure bur until the little finger can enter the cavity. By digital examination of the sinus, some idea of its condition can be obtained. The hemorrhage may be controlled by dipping plain gauze in hot water and packing the cavity a few minutes. Then with proper light one may make a visual examination and ascertain the exact condition.—*Le Grand, M. Cox, M. D., D. D. S., St. Louis, Mo.*

Retention of Inlays:—There are three forms of retention of inlays. Mechanical retention or locking the inlay in place by a dovetail joint, friction against the cavity walls and cement. In a great many cases too much is expected of the cement and not enough attention paid to the kind of retention that would prevent a failure of the inlay. After establishing the outline form of the cavity it must be made free from all undercuts. The seat of the cavity should be made broad and flat with a flat axial wall at right angles. In proximo-occlusal cavities there should be a step making a right angle with the axial wall. In the occlusal surface of the cavity the pulpal wall should be flat and widened in a bucco-lingual direction at its extremity to make a dove-tail joint to prevent the filling from being crowded away from the tooth when force is brought to bear upon it. The buccal and lingual walls should make an angle with the gingival and axial walls nearly equal to a right angle, making them nearly parallel, just diverging enough to allow the wax pattern to be removed. All walls should be cut away until strong, healthy tooth structure is reached, even cutting away an entire cusp when necessary. In cases where the tooth is badly broken down the use of posts is often indicated. If the pulp is in the tooth pins of irrido-platinum or clasp wire 20 gauge may be extended into the dentin from one to two millimeters in depth, care bing used not to strike the pulp or endanger its life by their proximity. In devitalized teeth, especially in bicuspids, and the six anterior teeth a post of good size may be used to extend into the canal; but the retention of the filling should never entirely depend upon such a post.—*E. D. Coolidge, D. D. S., Chicago.*

MEMORANDA

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of $2.00 an inch.]

OHIO STATE DENTAL SOCIETY.

The Ohio State Dental Society, which usually meets in Columbus, will hold its annual meeting December 3, 4 and 5, at Hotel Sinton, Cincinnati. A big meeting is assured. F. R. Chapman, Secretary, 305 Schultz Building, Columbus, Ohio.

MONTANA STATE BOARD OF DENTAL EXAMINERS.

The Montana State Board of Dental Examiners, at its annual July meeting canceled its reciprocity contracts with all the states with which Montana had exchange. It being the unanimous opinion of the board that such an exchange was not of any benefit to Montana or the state concerned. Dr. R. R. Rathbone, Judiciary Committee, Dillon, Mont.

COLORADO STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Colorado State Board of Dental Examiners will be held at the Capitol in Denver, Tuesday, December 3, 1912. All applications for examination must be filed with the secretary before that date. Examinations are theoretical and practical and applicants must be prepared to do such practical work as required. For further information, address J. L. Howell, Secretary, 532 Mack Building, Denver, Colo.

RECENT PATENTS OF INTEREST TO DENTISTS.

1021527. Dental hand porte-polisher, James W. Ivory, Philadelphia, Pa.
1021528. Fastening for artificial teeth crowns, James W. Ivory, Philadelphia, Pa.
1021065. Guard for dental instruments, James Neil, Jr., New York, N. Y.
1021639. Mouth-mirror, Howard R. Smith, Washington, Pa.
1021865. Narcotizing mask, Karl A. E. Fries, Stockholm, Sweden.
1022070. Anchorage for dental bridges and plates, Steele F. Gilmore, Indianapolis, Ind.
1022316. Sanitary dental waste-receptacle, Thomas S. Harlan, Salt Lake City, Utah.
1021927. Fountain-mold, Thomas J. Harrison, Sabula, Iowa.
1022139. Rotary tooth-brush, Joseph Horn, Philadelphia, Pa.
1021893. Dental post-extractor, Thomas W. Ross, St. Louis, Mo.
1022055. Artificial teeth articulator, Marceline Weiss, Havana, Cuba.
1022838. Dental broach, Levi L. Funk, Chicago, Ill.
1023641. Tooth-brush holder, George T. Greer, Roanoke, Va.
1023213. Dental impression cup, Miecislaw Marcks, Lubeck, Germany.
1023273. Dental regulator, Herbert A. Pullen, Buffalo, N. Y.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington D. C.

EXAMINATION OF DENTISTS FOR THE U. S. ARMY.

The Surgeon General of the Army announces that examinations for the appointment of acting dental surgeons will be held at Fort Slocum, N. Y.; Columbus Barracks, Ohio; Jefferson Barracks, Mo.; Fort Logan, Colo.; and Fort McDowell, Cal., on Monday, October 7, 1912. Application blanks and full information concerning these examinations can be procured by addressing the "Surgeon General, U. S. Army, Washington, D. C." The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between 21 and 27 years of age, a graduate of a dental school legally authorized to confer the degree of D. D. S., and shall be of good moral character and habits. Acting dental surgeons are employed under a three years' contract at the rate of $150 per month. They are entitled to traveling allowances in obeying their first orders, in changing stations, and in returning to their homes at termination of service. They also have the privilege of purchasing certain supplies at the army commissary. After three years' service, if found qualified, they are promoted to the grade of dental surgeon, with the rank of first lieutenant, and receive thereafter the pay and allowances appertaining to that rank. In order to perfect all necessary arrangements for the examination, applications must be in the possession of the Surgeon General at least two weeks before the date of examination. Early attention is therefore enjoined upon all intending applicants. There is at present a large number of vacancies to be filled.

REWARD.

The Rotterdamsche Tandheelkundige Vereeniging (Rotterdam Dental Society) offers once more and for the last time a reward of f300, $120, £25, for the invention of a Gnato-Dynamometer that will be suited for the use in dental practice. The instrument has to assign a pressure unto 150 kilograms. Below 20 K. G. the deviation may not surpass 1 K. G., while with heavier pressure it ought to remain within 2 K. G. The chew-contact plates must allow the introduction between a distance of 1 cm. This distance being less than 1 cm. it will be judged to be a great advantage. The shape of the chew-contact plates has to adapt itself to the inclination of the chewing-surface. With pressure exceeding 20 K. G., the weight has to be seen at once, or it has to be calculated very easily. Although the instrument has only to assign the pressure in one direction, it ought to work with a moderate lateral movement, too. With the front teeth only the pressure with edge to edge bite, not with overbite, has to be measurable. The instrument ought to be simple, strong and apt to be sterilized, as far as it comes in contact with the mouth. The chew-plates may not do damage to the teeth and their shape must allow that the pressure is applicable at any place between the chewing-surfaces. When examined, the assigner ought to be readjustable. The competitors are requested to send franco specimen, until October, 1912, to the Rotterdamsche Tandheelkundige Vereeniging, 93 Aert van Nesstraat, Rotterdam, accompanied by a motto and a description of use. Moreover, a well closed envelope signed with the same motto, and containing the name and address of the inventor. The jury is composed of the dentists: B. Frank, A. A. H. Hamer, D. D. S., I. J. E. de Vries, Amsterdam, C. H. Witthaus, D. D. S., Brussels, besides a technical expert. It will take decision in December, 1912. The result will be communicated to all competitors; they will get back their instruments. The price will be delivered in January, 1913, in the annual meeting of the Rotterdamsche Tandheelkundige Vereeniging. Dental and technical papers are politely requested to take this communication over.—The Secretary, Marie Muntendam, Isebree Moens.

NATIONAL DENTAL ASSOCIATION, WASHINGTON, D. C.

The association will be called to order at 10 a. m., September 10, in the convention hall of the New Willard Hotel (headquarters).

Invocation—Rt. Rev. Alfred Harding, Washington, D. C.
Address of Welcome—Hon. Cuno H. Rudolph, Washington, D. C.
Response to Address of Welcome—Frank O. Hetrick, Ottawa, Kan.
President's Address—Arthur R. Melendy, Knoxville, Tenn.
Modern Dentistry in Germany—Newell S. Jenkins, Dresden, Germany.

PROGRAM FOR GENERAL SESSIONS AND SECTIONS.

L. F. Kebler, M. D., Washington, D. C., Oral Dental Preparations.
F. E. Stewart, M. D., Philadelphia, Pa., Standardization of Materia Medica.
M. C. Smith, Lynn, Mass., What the Government Is Doing to Prevent Diseases.
William O. Hulick, Cincinnati, Ohio, Crown and Bridge Work.
J. V. Conzett, Dubuque, Iowa, Something About Cavity Preparation for the Gold Inlay.
Leon S. Medalia, M. D., Boston, Mass., Pyorrhea Alveolaris: Its Causes and Treatment with Vaccine.
George B. Harris, Detroit, Mich., Pyorrhea: Its Treatment by Bacterial Vaccines and Results of Animal Experimentation.
C. M. McCauley, Abilene, Texas, The Great Need of Improvement in Quality of Commercial Alloys.
B. Holly Smith, Baltimore, Md., Aristocracy in Dentistry. Do We Need It?
W. A. Lovett, Birmingham, Ala., In Hoc Signo Vinces.
H. H. Johnson, Macon, Ga., Other Methods of Making Gold Inlays.
W. R. Clack, Mason City, Iowa, Extension for Prevention vs. Pin Head Cavities.
Joseph Head, Philadelphia, Pa., Intimidation of Dentists and Dental Societies.
J. J. Moffitt, Harrisburg, Pa., The Treatment and Filling of Root Canals.
M. L. Rhein, New York City, Oral Sepsis and a Consideration of Its Systemic Effects.
J. F. Biddle, Allegheny, Pa., Diagnosis and Treatment of the Important Destructive Diseases of the Dental Pulp.
Thomas B. Hartzell, Minneapolis, Minn., Post-Operative Treatment of Pyorrhea Alveolaris (illustrated by stereopticon).

Harvey W. Wiley, M. D., Washington, D. C., A Consideration of the Effects That Impure Food and Adulterated Drugs Have Upon the Human System.

George E. Hunt, Indianapolis, Ind., Teeth and Health.

(The last two subjects to be given as lectures at the Wednesday evening session.)

A preliminary program was mailed to our members, essayists and clinicians August 3. In addition to above literary program, this contained 270 clinics and a number of additional ones will be incorporated in the official program.

RAILROAD RATES.

The Trunk Line and New England Passenger Associations have authorized a rate of a fare and three-fifths (3-5) within their territory on certificate plan; 100 certificates required and a fee of 25c for validating same. The Southeastern Passenger Association advertises round trip rates from specific points in their territory. Summer tourists' rates to Eastern points may be secured in Western Passenger Association territory. The Central Passenger Association refused to make any concession, but summer tourists' rates may apply from points in this territory.

Any local railroad agent can give jurisdiction of above associations, as well as give full particulars regarding rates and stopover privileges from their particular point. Inquiry should be made regarding excursion rates to points east of Washington, as such transportation, with stopover privileges, may be secured to a better advantage.

The proposed plan of reorganization is not to become effective until 1913, but our present constitution provides that any member of a state dental society, or affiliated society, is eligible to the national. The membership fee is $5.00, which pays one year's dues and includes copy of official transactions. Application blanks may be secured from the state society secretaries, and must be signed by the president and secretary, and can be mailed in advance, with fee, to H. B. McFadden, Treasurer, 3505 Hamilton street, Philadelphia, Pa., or handed to him or the credential committee at time of meeting. All reputable practitioners of dentistry are invited to attend this meeting and become actively affiliated with our association. Homer C. Brown, Recording Secretary, 185 East State street, Columbus, Ohio.

DENTAL COLLEGE COMMENCEMENTS.

CHICAGO COLLEGE OF DENTAL SURGERY.

Graduates—H. A. Albright, L. C. Berge, H. G. Benjamin, G. Bell, W. Brockbank, O. Bradenberg, J. Bellkofer, R. C. Bratten, L. C. Cox, W. C. Clyne, W. A. Cronin, P. C. Chambers, O. Chappell, J. C. Cussen, W. Doty, H. L. Deveney, H. E. Doyle, H. E. Devereaux, T. Domuratt, G. Denton, I. A. David, W. W. Evans, J. Ellsworth, A. Eilerts de Haan, C. R. French, A. E. Floto, E. A. Fierson, H. Fauconnier, W. Falkenreck, J. Gerring, N. Gianolos, J. J. Griffyn, T. E. Higgins, D. L. Horr, F. Hegstrom, C. A. Halley, W. Hyniewiecki, F. A. Hainline, J. M. Hannell, H. H. Hill, W. E. Halpern, M. E. Henson, W. R. Jarman, A. A. Jaffey, A. C. Jiroch, R. T. Johnson, H. C. Iltis, G. Katrava, M. Kyriack, J. Kuynders, R. E. King, A. B. Kohr, G. Kokores, H. E. Kimble, L. C. Knickerbocker, J. L. Lameris, L. J. Lundeen, E. A. Lewis, G. E. Lindmark, J. Lienlokken, R. C. Loudin, F. J. LaBelle, J. B. McAuley, M. Matsuno, H. Matthews, J. H. McDonald, G. W. Mills, G. C. Neymark, W. O'Day, E. Olsen, T. R. Pearce, A. Rawverda, J. Racette, J. H. Richardson, H. W. Smith, C. I. Soper, A. Sorenson, J. Stevenson, S. Sucharoff, M. Stoefhaas, C. Searl, W. J. Scruton, H. P. Sheppard, B. Spickerman, G. R. Sinclair, E. H. Springborn, C. E. Stark, W. S. Seed, C. L. Throop, E. L. Turton, T. Turney, C. G. Vest, H. W. Wright, G.

E. Wilcox, H. L. Webster, R. Wooster, E. J. Witherstein, R. Wood, R. T. Willey, T. Watanabe.

NORTHWESTERN UNIVERSITY DENTAL SCHOOL.

Graduates—A. M. Aaronian, A. W. Akesson, A. Amoedo, A. B. Applebee, W. Babcock, G. W. Bailey, R. T. Ball, H. L. Basford, L. P. Basford, F. A. Bass, E. V. Bodorff, T. E. Boone, A. R. Bradbury, C. T. Brady, F. J. Braxton, L. F. Carlin, T. Carlisle, W. R. Cashin, C. C. Collins, J. R. W. Cook, E. E. Corby, J. W. Croessmann, C. A. Culp, C. G. H. Cusack, J. H. Davis, A. A. Deans, A. L. Deeble, G. D. Dore, R. M. Dunlap, V. R. Dush, E. W. Edlund, B. A. Etzbach, E. G. Faller, G. R. Freedlund, C. W. Freeman, L. G. Freeman, J. H. Genter, O. G. Gerner, E. Gish, M. L. Gray, J. M. Green, E. P. Hanrahan, H. N. Harmon, J. C. Harris, H. A. Heil, F. N. Hobson, A. K. Hoffman, J. Hojem, E. J. Hughes, R. Jamieson, E. W. H. Johnson, G. G. Johnson, E. Kennedy, S. M. Krog, M. L. Kroschel, L. Larson, O. R. Linn, W. J. Love, F. W. Macko, R. A. Marshall, R. R. Massey, C. M. Mattice, H. McC. McElrath, G. M. Miller, St. Clair Murfey, A. C. Nelson, K. Numa, J. M. Orritson, J. M. Parson, J. G. Pelton, N. C. Pickles, M. M. Postle, M. F. Randolph, D. W. Rapp, W. E. Rice, W. J. Rice, N. O. Rogers, C. R. Root, L. A. Rose, T. J. Rowland, B. F. F. Sahr, B. M. P. Schroeder, K. L. Schrup, F. P. Schumacher, G. F. Schweiger, R. M. Sheets, L. J. Shoore, E. LeR. Sieber, M. S. Simon, C. W. H. Skinner, G. E. Smith, J. W. Stamp, W. A. Stander, J. A. A. Stenborg, G. J. Stephens, E. J. Stuer, C. W. Swords, P. L. Tawney, A. L. Tull, M. H. Tuttle, G. E. Ulvestad, C. Unseitig, H. J. Urbanowicz, J. Van der Henst, C. H. Vaughan, A. H. Vyverberg, A. Weding, J. D. Williams, L. S. Wilson, Y. B. Yoshida, R. M. Young.

UNIVERSITY OF PENNSYLVANIA, SCHOOL OF DENTISTRY.

Graduates—W. R. Bailey, E. H. Bestic, P. C. Brackett, J. A. Bray, E. Z. Briggs, W. H. Broad, J. D. Brown, Jr., L. J. Bruchera, M. Bury, H. W. Cairns, H. Caminha, H. McC. Carter, A. I. Chapman, G. B. Chapman, W. F. Clarke, H. W. Close, J. M. Creegan, A. W. Crowly, M. T. Cunningham, E. G. Dolan, E. J. Donehue, W. H. Donovan, D. M. Dougall, B. A. Easton, H. Elwood, DeF. W. Ewing, Le R. W. Farley, J. C. Finlay, W. A. Fosdick, H. N. Foster, A. C. Frank, R. E. Frey, E. G. Freiderich, J. E. Gabriel, A. A. Garfat, G. A. Gonard, J. J. Gorman, E. J. Gramcko, W. L. Gray, J. E. H. Guthrie, W. N. Hamilton, J. G. Hanna, F. J. Harris, E. M. Holmes, R V., Hooper, W. H. Hoyt, A. P. Husband, R. H. Hutchinson, H. M. Imlay, L. L. Irvin, D. H. A. Irwin, J. H. Johnson, W. B. Jones, W. E. Jones, J. W. Joslin, Jr., W. Jost, M. Kaley, J. F. Keeley, C. E. Kelly, P. E. Kendall, K. Y. Kerr, F. M. Kiel, M. A. Kirshbaum, M. R. Leplat, J. W. Lockery, C. F. Lore, R. M. A. Loyer, F. A. McComb, J. McCrystal, Jr., E. J. McDougall, F. J. McKeon, E. K. McPherson, D. G. Macfarlane, G. Macphee, R. H. Maris, L. F. Martin, A. L. Massonnet, C. J. Meyer, F. D. Miller, C. H. Molina, R. D. Morris, R. N. Morrow, J. J. Moynihan, W. G. Munson, R. J. Nash, G. E. Nicholas, B. H. Northrop, G. W. Oestreich, C. J. O'Leary, T. H. Olive, G. E. Parker, M. C. Pearce, J. J. Perry, G. S. Phillips, F. W. Pratt, A. Protzel, J. Protzel, L. F. Randall, O. F. Randall, G. H. Reed, A. D. de Rezende, R. D. Ribble, G. E. Riechelmann, C. S. Rine, E. W. Roberts, T. J. Roche, Jr., F. A. Rosado, M. F. Sandman, R. C. Shields, E. Shoemaker, H. S. Slocum, W. L. Smith, W. J. Sparrow, C. Steffens, A. A. Steiger, D. S. Stern, H. A. Stone, J. H. Stritch, A. Strudel, T. B. Sturdevant, C. W. Swing, R. Taraside, W. Tuck, F. E. Turowski, E. M. Van Dine, O. F. Vibe-Hastrup, S. R. Walker, C. H. Webber, C. S. Weigester, G. E. White, L. E. White, D. W. Wilbur, W. S. Wilkinson, J. E. Wilson, H. C. Winter, L. J. J. Wipprecht, H. C. Wood, S. Yamagata, Robert J. Yeo, A. L. Yetman, F. J. Younger, M. D. Parke, as of the Class of 1911, A. Q. Joseph, as of the Class of 1911.

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SOCIOLOGIC PROBLEMS.*

BY DR. G. FRANK LYDSTON, CHICAGO, ILL.

Those of you who have known me longest know that I have always regarded the dentist as my professional brother. I think Dr. Johnson and Dr. Reid will remember that I was probably one of the first in the country to advocate the affiliation of the dental and medical professions. For a number of years I harped on that string until possibly some people got a little tired of it. Some years later the subject did not seem so far-fetched.

I think that, as representatives of two great professions, we ought to recognize our common duty in the study of social problems. The medical profession is just beginning to wake up. I do not think the dental profession quite appreciates its own importance in the field of practical sociology—the study of social conditions and social reforms. There is a certain reason why we are particularly adapted to this movement, and that is the intimate contact we have with the laity. The more you study the matter the more intimate you will discover are the relations of the two professions to the social body, and I believe that anything I might say along these lines should be of quite as much interest to you as to medical men. It is for you to share the duty that is rapidly devolving upon the medical profession of taking a vital interest in social science. The medical doctor or the dental doctor is the best social doctor.

I wish first to say a few words about the modern school of criminology, the material foundation which we are coming to recognize for social ills. The first thing that confronts us is a lot of rot about the subject of degeneracy. I have tried to take a middle of the road course, and have not agreed with our great master, Lombroso, in everything, because, with all deference to him, I know from observation and my moderate knowledge of sociology that it is absolutely impossible for an individual to indulge in any special line of scientific research without on many occasions overshooting the mark. Many of you will recognize this to be true in your own profession, where some splendid work has been done in the treatment of pyorrhea or in bridge work, and the individual who has introduced these advances has overshot the mark. You have come to discount, not the value of the work, but his enthusiasm. Whenever we become enthusiastic in any special line, we have to stop every little while and take "count of stock" to see how much is really valuable and how much is chargeable to over-enthusiasm.

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*An address delivered before the Odontological Society of Chicago, May 7, 1912.

Now, in regard to this degeneracy idea: A certain friend of mine in discussing social problems one evening said: "Doctor, you talk of degeneracy, yet you have no standard of the normal. You cannot give an arbitrary definition of degeneracy, a definition that will stand the fire of adverse criticism." To which I replied: "By the same token we prate of insanity, yet we have no standard of the normal. Kleptomania, rape, assault with intent to kill, are sometimes due to insanity, and there is a legal defense of insanity. In other cases men are found not to be insane and they are punished, and still we have no arbitrary standard of sanity." There is a mental condition which we call sanity. It is based on a general consensus of opinion. It could not be decided by one particular man's opinion. There are certain mental conditions we have come to term insanity because they widely depart from the generally accepted average standard, but there is a certain amount of leeway in arriving at an opinion. We often meet with individuals who have some psychic peculiarity, but we are willing to discount that because in other directions he sums up so well psychically that we do not feel justified in saying that he is insane. As Dryden and Shakespeare said, there is a very thin partition between genius and insanity. Referring to degeneracy, a marked letting down of the physical structure or mental fibre below the plane which is generally accepted as normal we call degeneracy for want of a better term.

Ever since the birth of the Lombrosan school there has been a great deal of misapprehension as to what criminal anthropology really claims. In the case of Prendergast, who murdered Mayor Harrison, a very estimable gentleman testified as an expert, and said that the murderer was insane because he had a deformed jaw. Now as a matter of fact no criminal anthropologist ever claimed that criminal anthropology had a place in expert evidence in court. The fallacious deduction was drawn by some of the friends of the Lombrosan theory that a certain type of cranial conformation meant a certain criminal tendency. That is absolutely untrue. The degenerate, either in physical structure or in mental or moral status, is not necessarily a criminal. The point is, that the majority of criminals are degenerates. The general acceptance of the term degeneracy applies to the hereditary or congenital type. I believe the term may equally be applied to the acquired type, the letting down from the so-called normal because of environmental conditions after birth. I can not imagine a criminal being sent to one of our penal institutions and serving a prolonged term under existing conditions without degenerating physically and morally. The relation of the prevalent fallacious ideas of criminal anthropology to the science of criminal anthropology is the same as the relation of the pseudo or quack science of phrenology to the craniology established by Franz Joseph Gall, when he published his Atlas in 1808. The misapplication of his theories placed Gall in obscurity, and he will never attain the credit that is rightfully his. Prior to his day the method of studying the brain was to harden the brain and slice it into thin pieces and examine it with the imperfect microscopes of the day. Gall was the first to unravel the brain and show that the important functionating part was the gray matter, and that the impulses were transmitted by means of the white fibres. That was was only as far back as the end of the first decade of the 19th century, and medicine had advanced considerably at that time. No one had really ever dissected the brain until then. Prior to Gall, no one had ever accurately pictured the nervous system. Gall's plates to-day are beautiful, and I do not know any better ones from which to study the topography of the brain. Gall was the first to describe a typical criminal type of cranium. The occipital region, he claimed, was flattened in the typical case. He held that the seat of the domestic affections was located in the occipital lobes, and strange to say this particular defect of the criminal psychology tallied very beautifully with the defective cranial development. Gall claimed that there was a constant relation between the development of the skull and the development of the brain. Cranial malformation meant a variation from the normal qualities of the corresponding areas of the brain. In a general way there is not much question but that Gall was correct, but, unfortunately, from his views came the so-called science of phrenology. Spurzheim, a pupil of Gall's, stole his master's ideas and elaborated them into a fake system of phrenology, so that Gall has been given the credit of being the father of phrenology. Because of the disrepute into which phrenology justly fell, the whole scientific study of the relation of cranial conformation to brain conformation and brain conformation to brain qualities fell into disrepute. It has been revived within recent years without due credit to Gall.

The type of skull which I independently claimed was most frequently seen in the criminal was the one with the flattened occiput, and several years after I had brought out that point Lombroso made the same point. He also made the statement, which I had made before him, that a certain kind of skull in a given race indicated degeneracy, and that the criminal type of that particular racial type would differ from that of another race. I mention this to show the probable accuracy of our observations, as we were working independently. We may leave out of the question altogether the matter of the amount of modern research justified by the facts, and there is still a general principle running through it all; namely, that out of all the mass of misconception of what criminal anthropology means, and out of all the ruck of theories as to what this type or that type of skull may mean, and out of all the theories of what social degeneracy is, comes the fact that the foundation of moral and ethical aberrations is physical. Now this being true, all of our theories of penology are absolutely illogical. Society in general, legislators and the judiciary are just commencing to wake up. They are beginning to see that an ounce of prevention is better than a pound of cure. We pay more every year for our degenerate classes than we do for the education of our children. It is foolish to hark back to medieval medicine and treat disease without reference to the cause of disease. That time is past.

You can imagine how medieval the attitude of the social body as a whole is towards social diseases. Punishment is an anachronism. I would not punish the man who had gangrene of a limb, although I knew that the man was responsible for his condition. I would amputate the limb. Our duty is to protect the law-abiding citizen, and revenge should not be the line along which we work. It is just as absurd to send some people to the County jail under existing conditions as it would be to lock them up to cure them of typhoid or syphilis. I do not claim that we must sympathize with them. Pity them if you want to. I would pity a man with small pox, but I would not take him into my family and give my family small-pox. If you do not believe that we are as backward as Russia—a little further behind, for she has abolished capital punishment—you should go over to the bastile on the North side and examine the cells. I pledge you my word, if you should go to the stockyards and treat a single animal as those men and women are treated over there they would put you in jail, and if the attention of the public could be called to it your name would be anathema. You will find bunks over there with about two feet of space between them and the wall, with a slop jar for furniture and no ventilation and no light. All the light they have is from the corridor. The architecture is exactly the reverse of what it should be. How are you going to develop moral ideas in individuals subjected to an environment of that kind? It is merely a sample of what exists in nearly all the prisons throughout the United States. I remember with a great deal of interest the conditions at Blackwell's Island. That jail was built by Boss Tweed. It was a standing joke that he was afterward confined in the prison that he built. The county jail here was constructed years after that, yet it is even worse than that institution, if such a thing is possible.

In discussing crime, one says it is due to heredity, another that it is due to poverty, another to vice and another to environment. The time has passed for us to discuss any human problem except on biologic lines, and the instant you admit that you have not mastered the principles of biology you admit that you have not mastered your own profession. The sooner we understand that the fundamental condition that is responsible for immorality or morality is purely physical, the sooner we will have a point of departure for study.

Now, in reference again to heredity and environment: If you take our boys and girls and drop them into the slums at an early age, and they have the same conditions that the children of the slums do, they will turn out just the same as the children of the slums. Now, suppose we kept them in their normal environment. The larger portion come out right. In the one case the conditions were unfavorable, although the seed was good in both instances. Now we will go to the hereditary side of it. You take 100 children out of the slums that are badly bred and you compare them with the records, at maturity, of 100 of our children, and our children will show immeasureably better results. The bad seed in good soil does not bring the same fruit that the good seed does in good soil. The individual who takes into consideration heredity or environment alone simply has not a grasp of matters sociological. Oliver Wendell Holmes said that the time to begin reforming a man was with his grandfather. We are coming rapidly to the point where we would like to begin with the parents. Along comes the sentimentalist and says, "This will not do; this man and woman love each other and you must not interfere; they must be permitted to marry." Very well, let them marry. Other things being equal, there is no danger in insane persons and those with tuberculosis marrying each other, provided they stop with the marriage. They are no more criminal nor insane nor consumptive than they were before. But they must stop right there. One person's rights cease where another's begin. We must protect the unborn. In England, and wherever the law of primogeniture prevails, the rights of the unborn are jealously guarded. Everyone of us knows that all along the line of our heredity something might have occurred to make us lunatics, epileptics, or syphilitics. Being born is a serious proposition. Not to be born is not a serious proposition, and if it were possible to consult the unborn we know that the census would be considerably diminished.

There never was any reform worth while that was not stamped with the dollar mark. You have to show the public that evil social conditions menace its pocket-book. When you can show that decent citizens are taxed nearly a billion a year to support degenerates they sit up and pay attention.

Who cares for a doctor's certificate? You can get one for anything, from cajolery up. I can take you to redlight resorts right now and show you health certificates given to women seventy-five per cent of whom are diseased. Matrimony should be controlled by legislation. Dean Sumner's action has given moral prestige to marriage regulation. If we cannot keep unfit persons from marrying, we should sterilize Mr. Man. If he is willing to pay the price, well and good, but if not, prohibit the marriage. That is my attitude. The medical certificate does not go far enough.

I want to say a word about the social evil. Now, venereal disease is no more a social disease than is scarlet fever. Venereal disease is acquired through prostitution. Inebriety, crime, sex vice of various forms, pauperism and insanity are social diseases. Corrupt politics is a social disease. Our treatment of prostitution has been cowardly. We have some evidence that there is an enemy in the brush, and our way of protecting ourselves is to turn our back on it and say it does not exist. That is the way we have regarded the social evil. Now that interest has been enlisted in it, up springs a lot of social quacks who have panaceas. One is going to stamp it out by inspecting prostitutes, another by segregation and another by license. I am opposed to all these things, and I will tell you why. In a general way any system of police regulation places an opportunity for blackmail in the hands of the police, which is a little greater than they have now. This is the way the system formerly worked: I have seen 100 women rounded up and fined $3 apiece, which was divided among the police, the justice and the straw bailer. These women were not doing anything that they had not been doing before, and what did it mean? It meant that considerable time had elapsed since the previous "touch" and the authorities thought the women would stand another "touch." I do not say that the police should not control prostitution, I simply say there should be no official system of regulation which recognizes prostitution. If the prostitute does anything contrary to law, punish her, but do not have any system of recognition of the social evil as an institution. The social evil is no worse than it always has been. It won't grow any worse except as economic conditions grow worse. The high cost of living is causing an increase of it. The individual who brings down the price of subsistence and enables people to marry would be doing a better work than all the preaching that was ever instituted. Segregation is a notice to all and sundry that prostitution is a necessary social institution, and says to your boy that it is necessary, and that it must be planted where he can get at it when he wants it.

Even admitting that inspection is scientifically feasible, there is a very serious question in my mind as to what the effect will be on young lads who would be led to think they can safely consort with prostitutes. If we could knock out of boys' heads the idea that it is necessary to sow wild oats we would do a great deal. We would accomplish a great thing if we could even deter them from going to such places until they were eighteen, supposing that otherwise they would start at sixteen. Until recently gonorrhea was considered very much in the same light as whooping cough. If the sale of liquor in houses of prostitution were prohibited it would drive three-quarters of the high-toned houses out of business.

A RARE CASE OF RESTORATION BY REMOVABLE BRIDGE WORK.*

BY DR. M. E. A. PFLÜEGER, HAMBURG.

Please allow me to present a very interesting case which caused me a great deal of worry and work, and is as follows: A patient, aged about forty, presented himself with this condition you see on the screen (Figs. 1 and 2). Most of the teeth had been extracted, the remaining teeth were in a very bad condition, being attacked in the first stage of pyrorrhea alveolaris, caused, perhaps, by mal-occlusion. The teeth, in the superior jaw on the right side, were the mesial incisor, cuspid and first bicuspid, on the left mesial incisor, cuspid and third molar. In the inferior jaw the

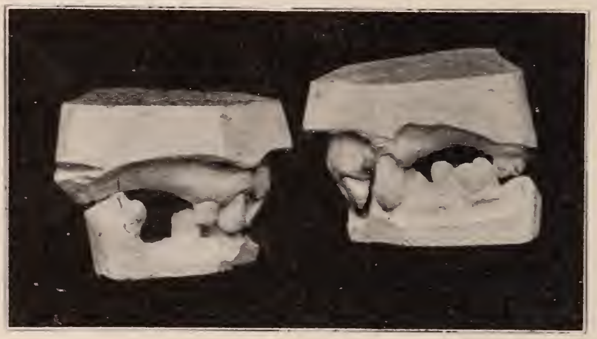

Fig. 1

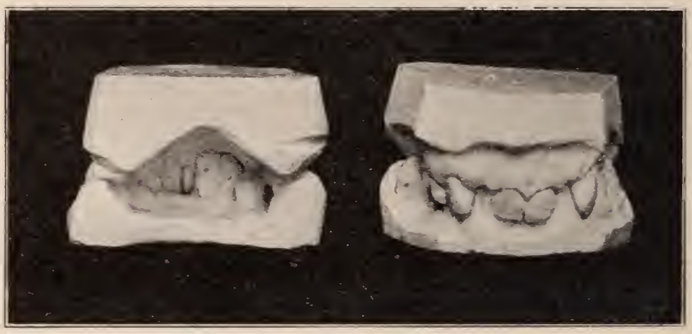

Fig. 2

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*Read before the American Dental Society of Europe, April, 1912.

condition was not much better. On the right side lateral incisor, cuspid, second bicuspid, and third molar; on the left lateral incisor, cuspid, first and second bicuspid and first molar. The occlusion was as seen on the screen. The upper incisors were cutting into the gum, anterior of the lower incisors, and the lower incisors were touching the mucous membrane of the palate, thus making mastication nearly impossible to the patient. The condition of the mouth was getting worse, something had to be done to save the remaining teeth and restore the lost function of mastication. I found no secretion of the gum pockets, the gum was firm around the necks of the teeth, but most of the teeth were, as already mentioned, loosened, caused by want of function. For this reason it was necessary to give the remaining teeth a firm support, which I thought advisable to be done by bridge work, which, for hygienic reasons, had to be removable.

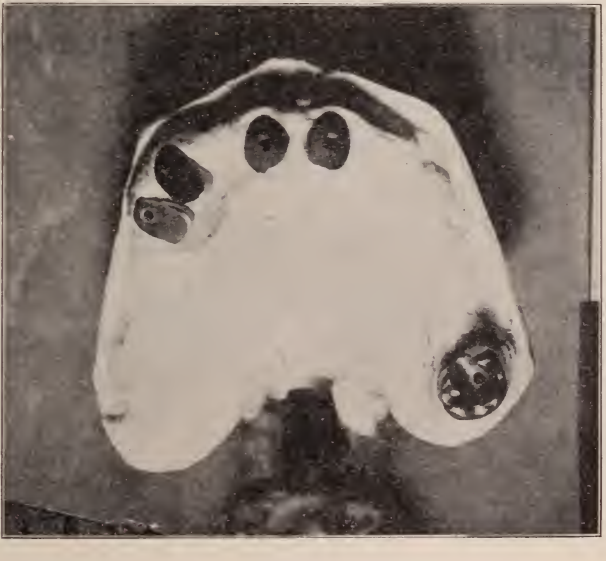

Fig. 3

The patient being engaged to be married, I was compelled, on account of time, to complete the upper jaw first. The cuspid on the left side had to be extracted, the other teeth were treated, the pulps were removed, the canals filled and the roots of incisors, cuspid and bicuspids were prepared for caps with tubes, and the one remaining molar was crowned with an inlay tube crown. The following picture shows the caps and crowns in position on the plaster model. (Fig. 3.)

As I said, I had not time enough to make both bridges together. For this reason it was hard to put in the upper bridge with fairly good occlusion with the lower jaw. The bridge was made on the model, without caring much for occlusion with the teeth of the lower jaw. The jaws were too close together and the bite had to be raised about 1 centimeter. Now, when the upper bridge was put in place, a roughly made bridge-like splint was put over the lower teeth, thus enabling the patient to masticate freely and to use the jaws in a nearly normal way.

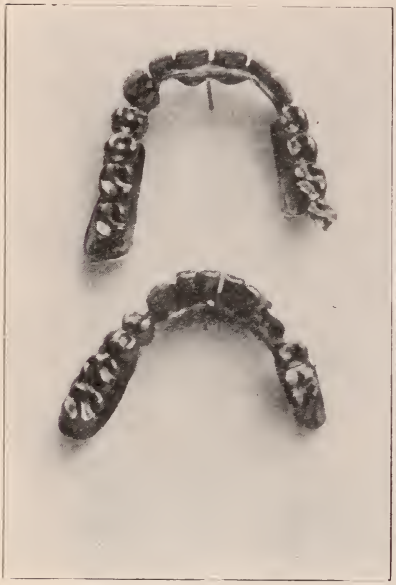

Fig. 4

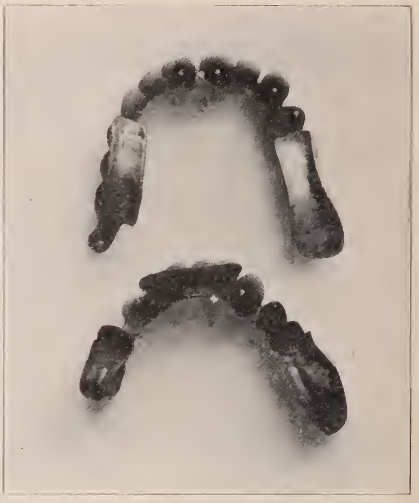

Fig. 5

I was glad the patient did not have time enough to finish both bridges at once. The work was so tiring for patient and me that we both were glad to have a little rest.

After this the patient went away for about three months, and I did not see him during this time. On his return the mouth was in a very good condition. The bridge was firm in place and the patient being able to masticate food to his satisfaction.

Immediately I started with the lower bridge, making it in a similar way. At each sitting the temporary splint was removed and replaced, thus enabling the patient to masticate as before.

Also, in the inferior maxilla it was not possible to save all remaining teeth. The lateral incisors had to be sacrificed as well as the lower left molar. The lower right second molar was abscessed but was treated with success. Nevertheless it was too weak for an abutment, and was crowned satisfactorily. For this reason the lower bridge is shorter on the right side. (Fig. 4.) The remaining teeth in the lower jaw were supported enough for the bridge. The other teeth were treated in the same way as the upper teeth. Cuspids for caps with tubes and bicuspids for telescope crowns. (Fig. 5.)

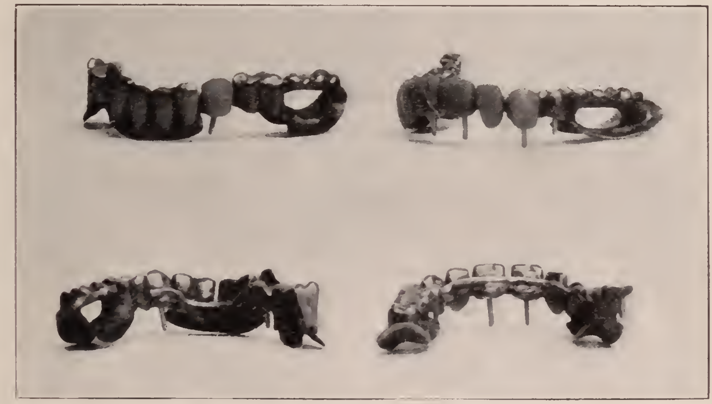

Fig. 6

Both cases I had to depend on saddles to equalize the stress of mastication. The bite being so long it was necessary to make the bridge hollow on account of the weight. For this reason I made the bridges, as you see on the projection (Fig. 6), the space between saddle and masticating surface being hollow. This arrangement was strong enough to stand the force of mastication. The different parts of the bridges are cast and soldered together. To give more strength to both bridges a heavy platino-iridium wire is soldered behind the lingual surfaces of the anterior teeth, going from cuspid to cuspid. The main trouble was raising the bite and keeping all abutments paralleled. Both bridges are satisfactorily in place since one year, the patient being able to remove and replace the bridges and keep them in prophylactic condition.

The patient, at present being absent, it is impossible for me to present the conditions of the case as it is now, but hope by our next meeting to have the same in my possession.

I am very sorry not being able to show the bridges in position, having no opportunity to see the patient. I hope to have a photograph or model of the bridges in position at the next meeting. I thank you very much for your kind attention.

THIRTY-SIX YEARS' EXPERIENCE WITH LEAD IN THE TREATMENT OF PERFORATED TEETH, AND TEETH WITH ENLARGED FORAMINA.*

BY DR. J. H. SPAULDING, PARIS, FRANCE.

In presenting for your consideration my experience in the use of lead in the treatment of perforations and certain cases of devitalized teeth, I feel that I am communicating a method of treatment which, though not new, is at least not commonly practiced, but yet which, in my estimation, is of the highest value, for in all the domain of practical dentistry there is, perhaps, no more difficult and annoying class of teeth to treat than those in which the foramen has been enlarged or which have been perforated into the alveolus either traumatically or by decay.

These cases are frequently supplemented by all the phenommena of suppurative conditions either with or without fistulae.

Teeth of this class are usually considered hopeless and are condemned for extraction by most practitioners. I do not consider, however, that we have done our full duty towards our patients by such practice and we should neglect no means within our power to render such teeth healthy and useful members of the dental arch. Careful attention to my experience and method of procedure in such cases will, I am convinced, be useful to any one who is not familiar with it.

Case No. 1. About thirty-six years ago the first case of perforation by decay came to my notice, and, as it was an important tooth (upper molar) I was very anxious to save it. It had a very large and deep cavity and the cementum was invaded by decay very low down below the margin of the alveolus in the center between the roots and a thorough removal of the decayed portion made an opening about four millimeters in diameter, which was quite sensitive and bleeding. I tried various methods of treatment in this case, such as putting gutta percha directly upon the opening; fitting a piece of gold and holding it in place with cement; a sheet of asbestos, etc., etc., but none of these were comfortable, or even tolerable. I did not want to extract the tooth and I finally thought of the comparative ease with which lead bullets become encysted and tolerated in the soft tissues and I hammered out a shot making a sheet of rather thick yet pliable lead and burnished this over my perforation. This was held firmly in place with an instrument while cement was placed upon it and within the cavity and allowed to harden.

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*Read before the American Dental Society of Europe, April, 1912.

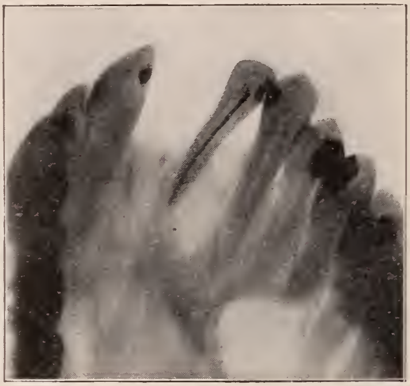
I filled the tooth temporarily and waited developments before proceeding further. There was soreness for a few days, but much less than was experienced after any of the previous treatments, and this gradually disappeared, much to my own and the patient's gratification.

This tooth was finally restored with a filling and had given no sign of trouble nearly two years later, when I lost sight of the patient.

It may be noticed that in this case there was not, nor had there been, the slightest suppuration. It is needless to say that I have used this method ever since in the treatment of all similar perforations and almost all abscessed teeth, especially where the foramen is enlarged, either by disease or by me in the treatment of the abscess.

Case No. 2. Some 18 years ago a gentleman presented himself with a lower molar sore and suppurating, which had been given up and condemned for extraction by another dentist. Examination showed enlarged foramen of distal root together with perforation by decay into periosteum between the roots. There was an abscess with fistula from the former and considerable suppuration from the latter. A careful measurement was taken of the exact length of the root by passing a "Donaldson" hook through the foramen and drawing it back till it caught on the end; the canal was then enlarged down to within less than a millimeter of the foramen, leaving a shoulder to prevent forcing the lead point through the opening. My lead point was carefully fitted always by exact measurement as to length; carbolic acid driven through the abscess until it appeared on the gum at the fistula, and the lead point cut off and driven down with a mallet as solidly as possible. The perforation between the roots was next treated with H2 O2 and the sheet lead burnished over it and fixed exactly as in case No. 1 and the tooth filled. No further suppuration ensued and the tooth was cured and entirely comfortable and has remained so ever since.

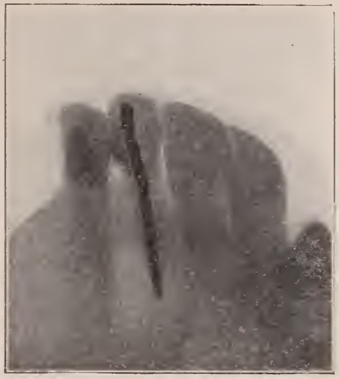
Case No. 3. Another case was that of a Roumanian lady, September and October, 1901. Left superior lateral incisor badly abscessed with fistula—very large foramen. Had been treated and mal-treated in Roumania to no purpose except to get worse. I took my measurements, as in the last case, and fitted my lead point after carefully enlarging the canal, leaving the shoulder to prevent going through as before. Same treatment with carbolic acid, but the tooth had given so much trouble I feared to drive in the lead point at once but placed antiseptic dressings in the canal three or four different times. There was no marked relief. Another injection of carbolic acid through the fistula and other dressings but still no relief from the pain and soreness. Finally I decided to drive in the lead point. When this was done *immediate* relief was experienced, but so instantaneous as to surprise both patient and me.



Case No. 4

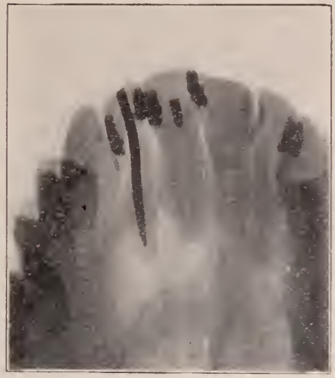
The fistula slowly disappeared and there had been no recurrence of uneasiness of any sort in 1904 when I saw this patient last.

Case No. 4. Mme. B., the patient, had suffered a long time with an abscess near the end of a left sup. lateral incisor,—the clear space shows the seat of the suppuration. Ordinary treatment, by cleansing and disinfecting the pulp canal, was ineffectual, so this was opened, the foramen enlarged, the abscess lanced and washed out by injections through the canal, the lead point fitted and driven into place, as already described. No recurrence during six years.



Case No. 5

Case No. 5. Mme. M., patient, presented herself in 1906 with a large swelling in the palate, about an inch behind the incisors, which had existed for over a year previously. Careful examination located the cause of the trouble; the swelling was lanced and emptied of pus; the canal in the lateral was freely enlarged clear through the end, a lead point was carefully fitted, H2 O2 fol-



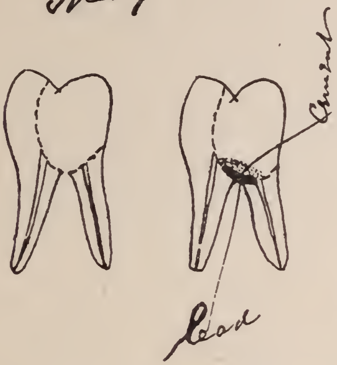
Case No. 6

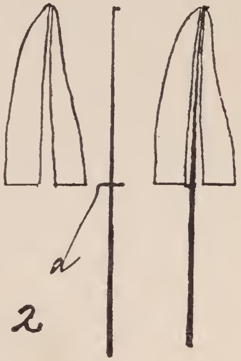
lowed by pure carbolic acid injected through canal and the lead point pushed into place. In this case it was left long so as to be easily removed in case the treatment was not effective, but was afterwards cut off and driven solidly into place, as no further suppuration or soreness was experienced by the patient.

Case No. 6. Miss McC., treated by me in 1908. Left lateral incisor which had caused constantly recurring suffering during more than two years, notwithstanding many ineffectual attempts at treatment by ordinary methods. I opened the canal as usual and fitted a lead point, which I thought was surely long enough to reach the end of the canal, and as there was some sensitiveness and roughness to the use of the Donaldson hook in getting the first measurements of the length of the root, I feared even to have gone beyond the end. As there was little or no amelioration this radiograph was taken which showed me the exact conditions: A careful calculation of measurement was made and the canal opened fearlessly to the end. A new lead point was fitted, the abscess treated as elsewhere described, and the lead point driven home, since which time there has been no further trouble, as a letter from the grateful patient's mother testifies. She writes under date of May, 1911, asking for an appointment for herself and says: "Dr. Spaulding so successfully treated Mrs. McC.'s daughter who had the abnormally long-rooted tooth that was discovered by the X-Rays and relieved her of constantly recurring suffering that she is glad to go under his treatment in this case herself." As you will notice this was written about three years after the treatment described above.

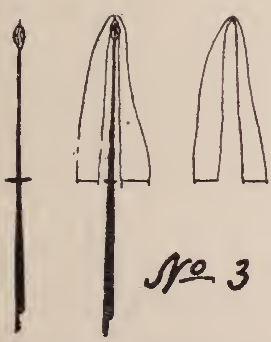
I have given you these illustrations of especially interesting and difficult cases, but let me say that I consider this practice so helpful and so certain to be successful that we all use it in my office in any case of stubborn abscess or even of exceptional irritation at the end of the root in preference to any other method. 26 cases in 1910, 28 cases in 1911 attest to our faith in its efficacy.

I will now endeavor to give you an outline of the modus operandi of the treatment. No. 1 shows a perforation by decay between the roots which has been treated with lead, as described in cases 1 and 2. No. 2 shows a root opened and enlarged with the Donaldson broach, if necessary, until the Donaldson hook will pass through the end. By drawing this latter instrument back until it catches on the end of the root an exact measurement is obtained, which is marked by a bit of rubberdam slipped over the shaft of the hook beforehand (No. 2-a). The canal is next enlarged by successive use of the different sizes of the Gates-Glidden drills as required


No 1


No 2

(No. 3). A lead point is next fitted to this canal and marked with a notch, as in No. 4-a. The abscess is then treated as you wish and when ready to drive the lead point in solidly a groove is cut near the end and the point inserted and twisted off leaving the point (No. 4-b) at the end of the canal. This is then driven in by the instrument (No. 4-c.) No. 5 shows a perforation sometimes made in searching for the canal. Such a perforation in any root or in any tooth in the mouth is almost fatal; and the lead treatment I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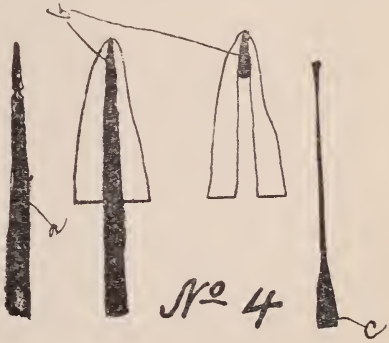
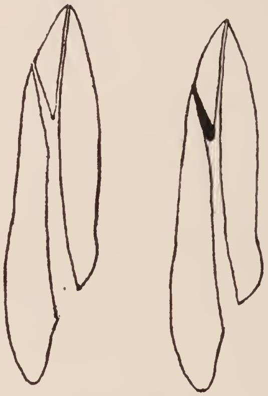

No 4

have described is the only one which gives almost sure hope of saving the tooth.

All traumatic lesions of this character are treated in the same manner with either lead points driven into the perforations (see

No. 5) or sheet lead burnished over them, as described in case No. 1. I may remark here that in all the 36 years in which I have used lead for enlarged foramina and perforations I have never yet had but two cases where it was necessary to extract the tooth because of failure, that is, so far as I have any subsequent knowledge of the cases treated and the end of the root showed absorption in both. What physiological phenomena take place in these cases to determine and maintain a healthy condition it is exceedingly difficult to determine and could perhaps only be determined by the subsequent extraction of such teeth and submitting them to examination.

It seems likely that either these become encysted in the tissues, as in the case of lead balls, or else the exactness of the treatment and the mathematical certainty of having closed the openings with a pliable and non-irritating material produce the conditions which nature demands for the return to healthy and aseptic conditions.



no 5

My conclusions, therefore, are that lead is more easily tolerated in contact with the periosteum or other sensitive tissues than any other material. That it is by far the best material to use because of the absolute certainty of exactly filling the enlarged canal to the end and no more, a thing impossible to accomplish in any other manner. This fact makes the saving of perforated teeth comparatively easy and facilitates the treatment of alveolar abscesses of whatever nature by permitting a free opening of the foramen for such treatment without fear of subsequent trouble after it is closed. In closing I cannot do better than to quote the following from the "Dictionnaire Encyclopedique des Sciences Médicales, Tome 25."

"Les balles peuvent causer des dégats dans leur course; une fois arrétées elles deviennent presque inoffensives. Verneuil en 1873 repoussait l'exploration comme nuisible, dangereuse parfois, et infructueuse. Même après une suppuration de plusieurs semaines on voit les projectiles s'enkyster et tous les accidents de prèsence disparaitre d'une facon absolue."*

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*Lead bullets cause more or less destruction in transit through the tissues but become almost inoffensive when not in motion. Verneuil in 1873 advanced the opinion that their attempted extraction was hurtful, often dangerous and always useless. Even after several weeks of suppuration such projectiles become encysted and all abnormal conditions absolutely disappear.

PATENTS AND THE MEDICAL CODE.*

BY DR. FRANK J. LUTZ, ST. LOUIS.

From the mere fact that a medical man has been selected to address you at your annual meeting I take it you agree with me when I say that you consider yourselves part of the medical profession, that you do not desire to occupy a distinctive position, that you do not consider yourselves sundered form the medical profession. It is true, your ancestors,—more particularly those who presided at the forge and pulled teeth, as well as individuals, all over the premises—perhaps did not consider themselves the first members of the healing art until they acquired some skill in the treatment of spasm and the heaves. Some of your would-be associates, who add to the pyschic element which becomes effective when you go to the dentist with a bad tooth, a sign which holds forth and in letters that he who runs may read: PAINLESS DENTISTRY, is perhaps not the noblest type of dentist.

Some learned German bacteriologist—and who dare gainsay them—has told us that the oral flora is represented by twenty-seven different varieties of bacteria. No wonder, therefore, that the dentist is an important factor for the guarding of the very portals of all things that make us exist. Therefore, you, as dentists, who are a part of the medical profession, I take it would be unwilling to be judged by other standards than those which are applied to the medical profession.

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*Address at Annual Banquet, St. Louis Dental Society, April 2, 1912.

Many, many years ago the principles which are known today as the code of ethics were published by an Englishman, Percival Pott, as letters to his son, who was about to embark upon the practice of his profession. They were later adopted in this country, as most things were about that time, for no copyright existed; they were good, and were adopted by a learned committee of doctors, members of an association, the American Medical; they were published as the so-called code of ethics which were the guiding rules until the promulgation of the principles of ethics, in 1903, at the New Orleans meeting.

In our various activities a clean-cut distinction between a professional man and commercial man is and should be made. Unfortunately the tendency of today is to measure success by the accumulation of that which should be, in the nature of things, the outcome of commercial enterprise. If medicine and its various subdivisions are to be lowered to the plane of commercialism, then clearly we have fallen from our high estate.

I would not be understood as being one of those who does not realize that certain changes have been wrought by various developments which make the position formerly occupied perhaps a little peculiar; but, after all, our conduct in life, our relationship to our fellowmen, must be governed and guided by more—or by something else than the mere seeking of wealth.

If we do our work to acquire wealth, if we do it to gain social position, then we are living a life devoid of ideals, a life which but rarely tends to the uplifting of ourselves and our fellowmen.

One of the very first injunctions which the code placed upon those who subscribed to it—and it is a purely voluntary subscription—is that it is derogatory to professional character to hold a patent on any instrument or medicine. The struggle against those who believe that the general government is concerned, as well as the individual, in the things which are sold under various patents as medicine, have recently been rather knocked out, in the language of the ring, because the spirits of darkness, the influences of greed have succeeded in removing from place, in removing from the watch tower the one man who has stood for the highest ideas of professional standards in regard to the common people of this country, and whose position the great president of the United States was unable and unwilling to sustain, though all the people of this country were the beneficiaries of Doctor Wiley's activities.

The medical profession has always held that in the exercise of its high functions the people should be the beneficiaries of anything which a medical man would discover or which he would invent. Charlatanism, superstition and ignorance were dominant in our profession at one time, and they have not entirely disappeared; but the enlightened, progressive medical profession has always held that all the people should get the benefit of anything a doctor knew. After all, much of this discussion, as to whether it is of value to a medical man to be the possessor of a patent, is purely academic.

Supposing the most elegant trephine has been invented. Do you suppose that we would be willing to go back to the days of William of Orange, whose head was a sieve because he was trephined every time he had a headache, thus creating a market for trephines and making the returns lucrative? On the contrary, complicated surgical instruments are rarely used and, as a matter of fact, modern surgery boasts that in every town there are more amputating instrument cases than legs have ever been amputated. How far this holds good for dentistry I am not prepared to say because, as I said to my family dentist on my right, my personal acquaintance with dentists is limited to paying dentist bills. I have, as the Germans express it, "no use" for dentists; the only time a dentist ever did anything for me was when one of my classmates bored a hole in one of my molar teeth and put a filling in it which is there yet. He must have been a good dentist; I have never had another dentist bother it since.

But while I have no close personal acquaintance with them, I do know that the dental profession, as a profession, will be loath to be classified with the commercial men. In our own profession of medicine there are certain men who acquire some little ephemoral reputation by making catgut or by preparing a certain kind of gauze; but, after all, they walk in the shadow; they do not walk in the bright sunlight; they usually hold the stock in the names of their hostler, because it is really not considered a very honorable thing to be a part owner in a patent, and then, too, the commercial value of a patent to a doctor or to a surgeon is comparatively little. Ruskin has said that the highest knowledge is the simplest knowledge. The greatest surgical procedures are had by the simplest instruments, by the simplest contrivances, and whilst, if a man could invent a surgical instrument and felt like his commercial values were enhanced by having a proprietary interest in it, how very little the return would be I need hardly mention.

To endeavor to patent a principle, to endeavor to patent a process, must appeal to the intelligent mind very much like an attempt to patent the principles of liberty or the principles of ethics.

Again, the mere fact that you are an enlightened body—and I stand as the humble representative who, for many years, endeavored to bring about what is almost accomplished in the medical profession, the union for good of all the physicians in this country—I say you, who belong to the organized profession of this city, show by your very organization that you propose to continue to live up to those principles which, after all, are the simple, honest relationship between man and man.

It is commercial to be the owner of a patent; it is not professional. It is mechanical, and no one is farther from wanting to live under the opprobrium of being a tooth carpenter when, as a matter of fact, you are specialists in surgery. You should know, and do know, the wonderful relationship which the oral cavity and its contents bear to the welfare, to the health and to the happiness of the individual.

No teeth, no stomach; no stomach, no brains; no brains, no man.

THE ECONOMIC BASIS OF PATENTS.*

BY MR. WILLIAM MARION REEDY, EDITOR OF THE ST. LOUIS MIRROR.

I can not imagine who it was, or why he was prompted to it, that invited me to come over here and chew the rag before a company of dentists.

I am pleased to be here; particularly I am pleased to follow Doctor Lutz, whom I have followed politically for many, many years; and always to defeat—whom I am delighted today to follow, even in his nefarious crusade for the establishment of a medical trust, and in his utterly indefensible propaganda for the suppression of metaphysical and patent medicine.

I don't know anything about dentistry; no dentist has ever made a dent in me.

I am down to respond to the subject of the economics of patents, and I find myself in the usual editorial position of having to display an apparent omniscience upon a subject about which I know nothing. It is the hall mark and sign lingual of an editor to be able to write "at the drop of the hat" about those things upon which he is profoundly disinformed, but I doubt if these requisites will be found satisfactory in the case of a speaker.

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*Address at Annual Banquet, St. Louis Dental Society, April 2, 1912.

I hesitate to follow the speech of Doctor Lutz, because it contained, as I think, infinite riches in a little room and covered in a broad and a beautiful way the great subject of the eternal conflict between ethics and profit.

Now, it stands to reason that everybody is in favor of progress, and that progress must come necessarily by way of invention. It is particularly an American creed and boast that this is the country of inventors and inventions.

There were two gentlemen crossing the Atlantic on a steamer last summer and they were discussing what was the greatest invention in the history of mankind. One of them held forth eloquently upon the advantages of steam, and the other held forth with equal eloquence upon the beauties and glories of the advancement in the uses of electricity. And while they were engaged in their argument a little man with a nose like a parrot and a name like a Rhine wine, said: "Shentlemens, I heard you talkin' apoudt invendtions, but the fellow dat infented indterest vos a birdt."

Now, unhappily, or maybe happily, this invention has never been patented and I don't suppose that many dentists, or even many doctors, have ever mastered much of the art that is covered by that invention. We are all agreed, I think, that the man who contributes anything to the forwarding of the interest of mankind is entitled to a reward for his labor. This has been held as far back, almost, as we can remember, although it is well to remark that the inventor of the greatest appliance in the history of humanity received no letters patent upon his inventions at all—and when I refer to this greatest patent, I refer to the instrument, or to the implement, known as the pulley.

The custom grew up, in a general way, of encouraging discovery and invention by the conferring of a monopoly upon the inventor. Kings issued letters patent to the discoverers of new realms in geography, and a Pope or two divided the whole New World between Spain and Portugal—to them and their heirs, to have and to hold, forever.

The essential element in the reward of the discoverer or the inventor was, that it should bestow upon him a monopoly.

This, as we look back in history, has not been actually the fact. The real discoverers and inventors of the world have, as a rule, not been the beneficiaries of their own work. In this country the patent laws have been operating for more than a century, and we find that they have been made the instruments of the perpetuation of some of the most burdensome monopolies the country knows. The patent laws do not work to the advantage of the inventor at all. He may secure his patent, but after it is secured he can do nothing with it. He is at the mercy of the capitalist, and the capitalist buys him out for a very small sum and proceeds to develop the invention, to the capitalist's own profit.

Not only that, but the patent laws have operated to prevent progress under this modern commercialized system. It is quite generally understood today that there are thousands of patents bought up by large concerns, and absolutely held out of use. They are absolutely used to retard progress and not to advance it. Furthermore, the patent laws have been made use of in divers and sundry ways to prevent the expiration of early patents by the addition of a screw here or a spring there, under minor patents, until the original title in a patent for seventeen years may be protracted to one hundred and seventeen, and the public possibly never get the benefit of the invention. So it has come to pass also that the patent has been a prolific source of fraud. The patent, as it manifests itself in the patent medicine is, I think, as all medicine men and all those related to medicine will agree, a very great injustice and a very great evil in this land.

The patent system is not necessary to encourage invention. The fact of the matter is, the mind of man will not stay quiet. He will investigate. He will explore. He will try experiments, and he will find out the secrets of nature and put them to his own use, whether the magnificent prize of monopoly be held dangling before his eyes, or not.

Of late years, those who have written upon the patent question or upon the question of invention, have come to the conclusion that in reality the inventor can very rarely be called an inventor; he is only a discoverer, and the records of recent mechanical progress indicate that this is true, because the claim to almost every great invention in the last fifty years is disputed by from two to half a dozen claimants of the honor of the discovery or of the invention at the same time. A conclusion from these incidents and examples is that these men had been led or directed to the discovery by existing conditions with which they had nothing whatever to do.

It is held, furthermore, that a man is not entitled to a patent—to a monopoly—upon his invention today, because, in reality, there is no essential or eternal justice in it. We are the heirs of all the ages. There is no man who does anything today who does not do it by virtue of things discovered and things invented by men whose names are forgotten in the oblivion of the past. To give a man a monopoly on an invention is really somewhat obsolete, when we think that all the educational, all the mechanical, all the electrical forces of the world have been developed before this time; that the government has supplied the education that has enabled him to pursue his studies, and that therefore he is doing nothing but working out that which the community in the past and the community largely in the present has done and is doing for him.

This view, I think, has been brought into rather more than usual prominence by the recent decision of the Supreme Court in the mimeograph case, in which the court holds that the holder of a patent can put any terms that he wants to on the sale of that patent with regard to its use in conjunction with other instruments and energies of life.

If this be so, the patent laws covering inventions are bound to develop into the strongest buttresses of monopoly that present society knows. If this be so, all proceedings under statutes against restraint of interstate or other trade will fall absolutely useless because, by the control of a few patents there can be constructed a trust that will control almost every mechanical invention now used by the American householder, merchant or business man.

This is merely the presentation of the economic view of patents that is now coming into general recognition. Of course, it would not be applied as drastically as I have put it here, in stating the case generally, but I think that the tendency is to change our patent laws so that a monopoly can not be conferred upon a discoverer or inventor, but that whatever is discovered or intended shall be thrown open to all the people by the government, and that the inventor or the discoverer shall take his reward in royalties, liberally bestowed.

This seems to be the solution of these questions of the control of patents; it seems to be the only means whereby inventions and discoveries can be made subject to control and not instruments for the exploitation of the people by the consolidated money interests of the country.

This is the problem which Congress will soon start to solve by putting upon the patent such regulations as will prevent absolutely unjustifiable, absolutely arbitrary restrictions as to its use, so that a man who uses one thing can use it only in conjunction with thirty or forty other things that can be controlled or may be controlled by owners of the same patent.

This is what has to be done, unless invention and discovery are to be made into means for the oppression instead of for the emancipation of mankind.

THE ETHICS OF PATENTS.*

By Mr. Percival Chubb,
LEADER OF THE ST. LOUIS ETHICAL SOCIETY.

I am in the same predicament, I think, that the preceding speaker found himself in, of not being able to answer clearly the question as to why I should be here this evening in a company of dentists. My friends, when I told them I was to banquet with the Dental Association, were puzzled; and I had to explain that my part was to exercise my eye teeth upon an ethical problem with which the dental profession is wrestling.

Now I want to say at the outset that I cannot pretend to have anything of special value to contribute upon the difficult subject assigned to me. If there is one thing that an ethical teacher is bound to abominate, it is anything in the nature of charlatanism; and he is a charlatan who would give the impression that he has anything important to communicate upon a subject when, in fact, he knows that he is a novice in regard to it. Again, if there is one thing that an ethical society such as I represent must realize, it is that life is difficult, and that all the great ethical problems of life are very difficult. The man who thinks otherwise, who thinks that it is a simple matter to cope with the great problems we human beings are fated to grapple with, is, it seems to me, a profoundly deluded man. The great problems of life are difficult because their solution demands a fine and sensitive conscience, and wide and accurate knowledge; and facing the complex civilization of our own time, one is bound to have a realizing sense of the amount of intellectual modesty which every one of us ought to bring to their solution.

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*Address at Annual Banquet, St. Louis Dental Society, April 2, 1912.

I respond, then, to your invitation to speak, mainly because the dental profession is deeply concerned with a problem of professional ethics; and because, wherever men are wrestling with ethical problems, there, I know, is life—wholesome vitality; for an interest in ethics is the focal and the most important interest in life. This it was which tempted me—I dare say in a moment of weakness—to accept your invitation for this evening.

In looking recently for some stories to help the ethical development of the young, I came across the story of Luther, with this very wise remark about it; that Luther would be ever dear to children because he threw an inkhorn at the Devil. Everyone who has preserved a vestige of the child-heart in himself, I think, gets interested when he finds ink-horns being flung at the Devil. There is a good deal of ink being flung at his highness today—chiefly printer's ink. As your chairman, with last Sunday's newspaper in his mind, has intimated, I have myself been mildly bespattered with it within the last few days; so that even when the body at which the ink is flung may not be, after all, the Devil himself, or even the Devil's advocate, the exercise of ink-flinging may be an interesting game for the youthful spirits of our press, and entertaining to the public.

We have recently had some good black ink thrown editorially—and by the gentleman who preceded me, who is such a good shot always—against the recent patents decision of the Supreme Court. It is that decision, more than anything else, that has interested the average layman in the subject of patents and the ethics of patents. But what qualifications has the ordinary layman to pass anything like an offhand judgment upon that decision? What does a somewhat sensitive intellectual conscience demand of one when he is face to face with an issue of this kind? I say it demands, first of all, a suspended judgment, pending a careful study of the matter. That, to my mind, is the first sign of intellectual aptitude, not to speak of conscience—the suspended judgment in the face of any difficult matter with which one is not specially conversant, in order that one may become fully informed concerning all the facts of the case.

When I myself reflect upon that decision and upon the general question of patents, I find myself in a world of considerable perplexity; and, adding to my small reading the few articles with which one of your members supplied me about the troubles among dentists in regard to patents, the more difficult the whole matter becomes. I have no competent judgment to pass upon it. All I am concerned to do is to indicate the sort of ethical approach to the subject which anybody especially interested in ethics might make.

One goes back to the root of the matter by asking, Why are there patents at all? Why not have the original state of affairs, whereby any man finding out anything, inventing anything, would take it as a matter of course that others would imitate him, take up his invention, as speedily as possible? The question is so pertinent because that is the attitude which, for reasons of its own, the medical profession takes on the question, as Dr. Lutz has reminded us.

Mr. Reedy has already mentioned one or two historical instances that may help to bring home the significance of an interrogation of this sort. Others may be cited. What would have happened, for example, if the inventor of printing had patented his invention? The course of the world's history would no doubt have been altered in a most interesting way—not altogether, be it observed, for the worse. This invention has not been an unmixed blessing. Or, to take another speculation: What might have happened if the invention of gunpowder had been patented? You will easily see that that, too, might have been a most beneficial safeguard by which the course of history might have been modified.

The course of the world's history would undoubtedly have been immensely changed if the device of taking out patents had been known and adopted far back in the centuries. But it was not; and the question is, how and why did the practice arise? There can be only one answer: Because it was regarded as beneficial to society to introduce some system granting patents; beneficial, in the first place, as a means whereby society might reap the fullest benefit of every invention; beneficial in the second instance —and here we touch perhaps the sensitive point in the situation— because it would stimulate invention by protecting and encouraging inventors.

How stimulate invention? By rewarding the inventor. It is true that this end has been largely defeated, because it is not so much the inventor as the promoter who has profited; but, after all, it furnishes the main reason why most people defend the patent system. It is justified, not on any ground of the natural rights of the inventor—we must get rid of that old notion—not because a man has a "right" to his own invention or to any particular fruits of that invention; but, as I said before, rather because inventions are beneficial to society, and should on that account be encouraged. Indeed all laws are to be brought back ultimately to this test: Are they benefiting society, are they helping progress, are they aiding the development of commerce and industry?

We must not close in too rapidly upon conclusions, however. This was brought home to me on consulting the new edition of the Britannica on this question. I discovered that it does not bring out one interesting fact in relation to the history of patents—and, let me say, incidentally here, that this warrants another charge of inadequacy and inefficiency against the new edition of this Encyclopedia—in fact the more one burrows into it, the more defective does one find it in certain respects. In this instance, it failed to record the fact that the practice of modern civilized nations has not been uniform in the matter of patents. As far back as about 1860, Holland, the civilized country of Holland, repealed its patent laws. In that country there are today no laws regulating patents; and, considering that it is one of the highly educated and civilized countries of Europe, such a fact should give us pause in drawing any conclusions, or in generalizing quickly as to the ethics of patents.

It seems to be held in Holland—and the argument has been urged many times—that, on the whole, society would gain greater benefit now-a-days if the patent laws of nations were entirely repealed. That argument was forcibly presented in England the last time a radical amendment of the patent laws was proposed.

Here is a vital difference of outlook. Furthermore there is a striking difference between the spirit of the patent laws in different countries, as, for example, in this country and in England. This reflects a difference between the ethical viewpoint of the two countries. In England the dominating consideration in regard to patents is the benefit to the public; in this country the dominating consideration is the rights of the inventor. As the one or the other of these is emphasized, will conclusions differ in regard to the working out of the patent system.

Here the tendency has been, as Mr. Reedy has already said, to over-emphasize the individual rights of the inventor—although the inventor somehow does not profit as he should. *We still are governed, as recent decisions of the courts show, by the outworn individualistic ethics of the 18th Century, and have not grown into the new social ethics which is going to bring this and all other questions to the test of the principle of the greatest common good.*

Here we are at the root of the question. As a man's philosophy of ethics is, as a man's philosophy of society and the relation of the individual to the mass, so will be his conclusions on this and all other great ethical problems. It is a new social ethics, a new social philosophy that is being born today, and a most inspiring challenge it throws down to the American people, a challenge which, if accepted honorably, will mean a renaissance of modern life—reaching down into the very foundations of the moral life of the nation.

I must pass rapidly on. I have so far simply tried to lead your thought along a certain line of approach, asking why there is an ethics of patents, and what ethical principles seem to be involved in the situation. I must come now to the matter that has been in your thoughts, so far as a layman can have an opinion about it. I merely wish now to state the problem. A problem properly stated is more than half solved.

Now, as I read about the matter in the dental periodicals sent to me, it seemed to me as if the specific issue for you dentists turned upon the question of what is the nature of the dental calling. Is it a profession; or is it in part a profession and in part a craft? There is no reason whatever, if the dental profession involves a large element of craftmanship, is largely a matter of mechanism, and mechanical contrivance and dexterity, why it should not be very clearly understood as such. There would be nothing in that to derogate from the position of the dentist. Not at all. The question at issue would, then, seem to resolve itself into this: Are you really, as Doctor Lutz implied, part of the medical profession, not to be distinguished or differentiated from other parts of it, or are you really something a little different? If you are something a little different, the beginning of wisdom is to recognize the fact and to prescribe accordingly in regard to the rules which should govern your profession. As I said before, I speak as one that knoweth not in these matters; but I should suppose that there is a great deal more of mechanism involved in the work of the dentist than there is in that of the general practitioner—or even the surgeon.

If that is so, may it not alter the case ethically? May there not be a differentiation of ethical status? In other words, the issue is this: Is the ethical status of the dentist exactly the same as the ethical status of the physician or the surgeon? I say I don't know enough to pass judgment. I merely try to understand the ethical issue—to get the problem stated.

Now, considering the ethical position taken by the doctor, I can quite understand the desire of the dentist to call himself an out-and-out professional man and so put himself on the same ethical basis as that of the profession of the doctor. From my personal point of view, the profession of doctor involves a higher standard of ethics than any other profession that I know of. There is more altruism in a doctor's point of view and attitude than there is in that of any other profession. There is a keener sense of obligation to serve—to heal the sick and do good to the suffering—than in any other profession.

This, I ventured to say the other night at our meeting on medical ethics, was first of all brought home to me by reading Ruskin's treatment of values and remuneration for services in his "Unto This Last." The doctor's profession is one that obviously makes it impossible to estimate the value of his services in any mechanical manner. You can't evaluate a doctor's services when he saves a life.

For such reasons I can very well see why the dentist should be desirous of aligning himself with the doctor, and of making the same ethical canons apply to his profession as those which apply to the profession of the doctor.

That is, I understand, the position which Dr. Lutz has supported here tonight; the view that dentistry is not a craft, but is a profession, to be governed by the same ethical spirit and principle as that of the physician or the surgeon.

Now, if that is so, then I say that we are at the parting of the ways. As I understand the position taken in most of the discussions among dentists, it is that it is perfectly proper for the dentist to take out a patent. That, I gather from the reports I read, is the overwhelming sense of the dental profession. If so, then, it seems to me the thing is to take that position firmly, clearly, without any hypocrisy.

May I add a word concerning the proposal I have read of in your journals? I don't know whether it is new—but it is new to me—this, namely, that the securing and using of patents shall be controlled henceforth by the dental profession itself; and that controversial issues shall be decided by the expert opinion of the dentists as to the value of a patent and the remuneration of the inventor of the patent. This is to apply a new set of principles. It would appear to imply that the organized professional conscience shall be the judge in these matters.

I conclude by congratulating the profession upon its keen interest in such an issue and in the ethical aspect of that issue; upon the fact that this question of ethics should appear to it to be such a vital and profound matter, because as I said at starting, where there is this determination to get at the real fundamental issues in a matter of this sort, there is life, and the endeavor to live deeply and widely.

THE VALUE OF MASTICATION.*

By Dr. J. F. Alcorn, St. Louis, Mo.

As practitioners of dentistry, we are placed in a position to more thoroughly see, understand and to value more highly the uses to which the oral cavity is heir, than any other branch of the healing art. The mouth and its relation to the body and to life itself had never been regarded with the deep concern that is its due until the demand for skilled dental surgeons created a scientific corps of professional men, learned to the extent of such thorough capability in research and experimentation that today this cavity is regarded as the main avenue of bodily health or disease. Its cleanliness is no longer a mere toilet to please the eye of the critical, but a hygienic necessity for the reduction of micro-organic life to a minimum, and for the stimulation of the tissues both hard and soft to a condition capable of withstanding the ever ready attacks.

The mouth is one of the most important orifices of the body, and being controlled almost entirely by the will, it has become more neglected, ill kept and improperly used than any other. Only too often does the careless subject learn that the organs of mastication intended for a life time of usefullness are fast disappearing. It was not intended by nature to supply a dental apparatus of exceedingly hard texture to a being that did not need it, and such an equipment when used insufficiently and neglected in its cleanliness, can only degenerate.

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*Read before St. Louis Dental Society, June 4th, 1912.

Man has so forgotten and ignored the want of attention mastication requires, and the proper value of this function has been so thoroughly lost sight of in the mad rush of progress in all things mental and mechanical, that we are now confronted with a problem of conservation that is alarming indeed. The hygienic movement has been launched to cope with the ravages of resultant decay, and deformities, physical and mental. And in the teaching of oral hygiene is our only hope of instilling into the minds of the public, the necessity of attention not only to cleanliness but to the proper use of the masticatory organs.

Millions of dollars have been, and are now being spent in the effort to supply food and drink to the human body in a condition of purity and wholesomeness; to little avail, however, unless much thought and action is given to the fact that an unclean mouth can contaminate the purest food sufficiently to undo all that could be done in the cleanliness of preparation which, coupled with the process of faulty and insufficient mastication, portrays evil in metabolic results.

If we could but return to the primitive methods of using the jaws and teeth, such educational movements as that of oral hygiene would be unnecessary; there would be much less use for dentistry, and our bodies would be stronger and disease less prevalent.

Under our present conditions of living the proper use of the mouth is almost impossible, for the advance of civilization has caused our food stuffs to be prepared in a way that will appeal to the eye and the sense of taste, and require a minimum amount of time for the consumption of a maximum quantity. Slight thought is given to the fact that quality not quantity of food is the requisite, and that only the amount digested is the tissue builder.

It is probably two hundred thousand years since man first had his earthly being, and six thousand years ago, we believe, civilization began. Since that time, man's brain has slowly developed to the present stage of perfection. Modern dentistry dates back less than one hundred years, and with its beginning, the dental apparatus began a more rapid decline.

Dr. T. W. Brophy, in his discussion of a paper, read before the Chicago Dental Society recently, said he believed the teeth of today were better than those of seventy-five years ago, that there is no difference in regard to pyorrhea, etc. With this statement I wish to take issue. Was it true that our grandfathers lost their deciduous teeth by decay and extraction long before their days of usefullness were past? Did they cry with pain from great gaping craters in molars at such tender ages that knowledge of the cause was impossible? Did they often find their permanent teeth erupting in irregular fashion with the gums still retaining the decayed roots of deciduous molars and incisors, refusing to give way, as nature had decreed? Was it then the rule, as it is today, that our robust, stalwart forefathers, strong in physique to the point of immunity to most disease, were fed when in infancy and youth, through mouths ladened with stagnant cesspools of fermenting food stuffs and excessive food debris lying in the sulsi and interdental spaces, and having their food treated with pathogenic secretions from puss pockets, fistulas and decomposed pulp tissues from canals left bare by the decomposition of the tooth's crown; teeth so sensitive from decay that the coarse foods cooked in an open fire were impossible of consumption? It is impractical to suppose.

Seventy-five years ago, starchy foods were not so easily procured and occurred in far less numbers of forms and the process of reduction by cooking to a soft, shapeless mass, or to a point where mastication was unnecessary, was much more difficult of accomplishment than it is today. Only since the invention of modern cooking appliances have soft foods been made so abundantly possible.

It is only since the industrial age was inaugurated that the cities have grown to such magnitude, enabling the grocer and baker to spring up so close at hand, handling foods ready prepared and in varieties far in excess of our physical needs.

Tooth decay is by far the most prevalent disease of the human race, and has, no doubt, always existed, but it is safe to say that its progress in destruction is increasing, not decreasing. What is true of caries of the teeth must be true of all defects and pathologic conditions of the oral cavity.

In 1860 Mr. J. R. Mummery of Great Britain carried on a series of examinations of the skulls of many ancient and primitive races for evidences of caries. Some of these various tribes lived almost entirely on meat, others subsisted on a mixed diet of vegetable products and meat and still others lived mainly upon vegetables. In all races examined some evidences of caries were found, but the total percentage, compared to that of today, was very low, being less than twenty-five per cent.

Mr. Mummery also observes that those people, living wholly or in part on carbohydrate food, were more disposed to dental caries than those relying almost entirely upon meat for food, and that in the advance of civilization the tendencies towards decay of the teeth became greater.

The nearer all animals live to their natural environments, the more perfect will their physical organisms be. Man has been subjected to the stimuli and precedence of thousands of years of existence and the influence of accustomed environment for body and cell that has existed for such countless numbers of generations cannot be changed abruptly. Function, growth and process of nourishment of any organism cannot change without telling degeneracy in stability and strength.

In the present age there are few factors acting upon us that figure in the health and well-being of our ancestors. We are subjecting our bodies to new influences that our forefathers never experienced or even thought of. Nature's laws are transgressed in our mad rush for mental development and sufficient thought is not given to the fact that in order to develop and maintain a healthy brain, great care must be given to its physical support. A diseased and deformed and ill fed body cannot possibly possess a powerful mind.

Of the evils most harmful to longevity and posterity and the hardest to combat and check because of their pleasing nature, our present methods of preparation and consumption and resultant faulty assimilation of food stuffs are most pronounced. These methods cannot be wholly within the bounds of reason.

Man has ever been prone to strive to get the most from the least amount of effort and, considering hereditary tendencies, it is not natural that any food when masticated sufficiently for swallowing would be retained longer within the mouth. Disuse and abuse of the dental organs and the wilfull negligence of proper mastication, is, therefore, but a natural tendency and is the paramount predisposing cause of oral disorders.

In an adult that has from childhood masticated efficiently, we generally find all parts of the oral cavity as well as those adjacent thereto, well developed. The teeth are regular and properly occluding, nasal and naso-pharyngal passages are spacious and mucous membranes are strong and healthy.

True mastication cannot be tought too early and its physiological worth to the development and strength of the hard and soft tissues within the oral cavity, its essential assistance in stimulating development of the facial bones, the glands and lining membranes in and adjacent thereto and its indispensable value to further digestion, is too positive to be passed unheeded.

Carbohydrates (various forms of cereals, vegetables, fruits and sugar) are the chief foods made soft by cooking, and although it is granted that in this state they are more readily acted upon by the digestive juices, they are not more digestible, because of the fact that they are more readily bolted, exciting little salivary flow and consequently a meager amount of ptyalin is mixed with the food. Ptyalin is the only digestive the saliva contains, and the only enzyme that has any great digestive action upon carbohydrate food. The secretion of saliva is in direct proportion to the hardness and dryness of the food and that which is secreted becomes more strongly alkaline when quantity is demanded, than when the flow is first excited, not only aiding digestion, but preventing bacterial fermentation of deposits remaining after deglutition.

The habitual abstinence from hard and dry foods promotes offensive, spongy, bleeding gums, which we may take as the most pronounced forerunner of pyorrhea alveolaris. Whether the cause of pyorrhea is local or systemic or both, the fact remains that it is a disease of the peridental membrane and that any membrane or part when well fortified by natural stimulus, thorough blood supply and healthy surroundings, is self-resistant to pathogenic invasions.

Great exertion of the muscles of mastication excite the flow of lymph, the requisite for salivary formation, and the hardness of material crushed within the oral cavity together with the muscular force required, stimulates the flow of blood to the gums and alveolus where its abundance is most essential in the rejuvenence of tissue.

The developmental effect the muscles of mastication produce in the facial formation is observed quite early in life. We all know the important part mastication plays in the shaping and strength of the jaws; their expansion by the exercising of a strong normal tongue and the outward pull of the pterygoid muscles upon the maxilla. Powerful opposition of opposing teeth tends to excite a healthy growth of their own roots, during the childhood period, and strengthens their surroundings, producing a thick, tough alveolus.

Where these factors are not in evidence, we not only have the unavoidable malocclusion of the teeth themselves and the constricted palatine arches, but we generally find no well developed nares, no straight nasal septum with spacious, healthy channels and regular well defined turbinates.

With these manifestations travel hand in hand the pathological conditions of mucous linings throughout the respiratory tract. The narrow nasal passages are inadequately drained causing inflammation. During the years from four to sixteen the glandular tissues of the posterior part of the naso-pharynx becomes hypertrophied forming adenoids. These conditions prevent the passage of a proper amount of air to the lungs, and mouth breathing is the result. In the mouth habitually open the tongue loses its lateral pressure and with the buccinator muscle drawn tense causes a restriction of the jaws. The air is improperly conditioned for the lungs; dryness is produced in the mouth and throat, augmenting the action of caries, irritating the mucous membrane and forming a good field for tuburcle bacilli.

The development and maintenance of the salivary glands and the health and strength of their secretions depend much upon muscular action in exciting the blood and lymph in adequate quantities. During muscular inactivity the flow of lymph almost ceases.

Thoughts of a meal or sight of a tempting morsel causes a flow of saliva and gastric juice. This sense is called appetite. Professor Chrittenden of Yale University has said that this is the voicing of the body's food requirements. Keeping the mind on the taste of the food, chewing until involuntarily swallowing such foods as the appetite craves, there will be no over indulgence. There can be no indigestion, no media is present within the intestines to develop bacteria and pathogenic mycro-organisms that have escaped the saliva and gastric juice, are rendered inactive or die for want of sustenance.

In the long course food must take in the effort toward tissue building, the parts under voluntary control are the terminals only. When food has passed through and beyond the first three inches of the digestive tract, all voluntary treatment ceases.

In conclusion I would ask: In the growing youth is there any function dealing directly with the body's development, that is more important and valuable than mastication?

SOME THOUGHTS RELATIVE TO THE PRESENT STATUS OF DENTISTRY IN THE RURAL DISTRICTS AND THE OUTLOOK FOR THE FUTURE.*

BY E. K. BLAIR, D.D.S., WAVERLY, ILL.

In considering the conditions that exist in the rural dental office, let us draw the dividing line between urban and suburban, or city and country dentist at the city limits of Chicago and permit very few centers of population outside of this great metropolis to pass without notice. In fact, it may be difficult to fully survey the field and leave Chicago out of the list of controlling factors that help to make or unmake the welfare of the rural practitioner. In this day of rapid transit with steam and electric lines vieing with each other in an effort to transport with the greatest comfort and in the least space of time a restless public, nothing seems half so sure as the tendency of the suburban population to rush to the business centers under the slightest pretext, for any and all of the necessities of life. The second city in the Union reaches its tentacles far into the country-side and nothing seems to satisfy its insatiate maw; or possibly to put it in a more agreeable form—the latch string of the gates of the city by the lake hangs far down on the outside to all the world and her citizens are ever ready in a business and professional way to meet the requirements of all comers. In a lesser degree this same condition exists in the smaller cities throughout the state, practically the same spirit manifesting itself wherever you go, the chief governing factor being the number of population, be it a city of the first, second or third class, county town or village.

Leaders in all educational work, masters in every branch of dental science, our fellow practitioners in Chicago are the most potent factors in enlarging the sphere of activity of the members of the profession everywhere. It would be difficult indeed to estimate the benefits derived by country practitioners from their teachings or to compute the encouragement those in need of dental service have received, by the masterly manner in which the most difficult cases submitted to their care and judgment have been disposed of. To this element in our profession we make acknowledgement full and complete, giving honor to whom honor is due and wishing them abundant reward for their labors.

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*Read before the Illinois State Dental Society, May, 1912.

But after we have conceded more than two thousand dentists located in Chicago their full share of the field, we have left almost 2,000,000 people residents of the great prairie state who must be administered to by the rural practitioners.

Your committee, desirous of provoking a discussion that may prove helpful to this branch of the profession have assigned me the duty of outlining what seems the best course for the operative dentist located in the rural district to pursue. To me this is a difficult task, for, to tell the truth, I do not feel that there is an extremely wide chasm existing between our more fortunate brethren the city dentists, and those located in the country, and I fear it will be considered presumptuous for me to express an opinion of either. Environment has much to do with any man's success in life, no matter what may be his occupation, and in mastering the intricacies of a general dental practice it is not to be ignored. No one doubts that unusual advantages are enjoyed by those who reside within the shadow of the great institutions of learning, in a stone's throw of the supply houses and in close neighborly contact with numerous fellow practitioners. These helpful conditions are denied the rural practitioner, and make it necessary, even obligatory, for him to put forth an extra effort to keep in touch with the progressive thoughts in his profession.

Conscious of the conditions that surround him and mindful of the limitations that beset the average dentist located in country towns, he must earnestly devote himself to the task of accomplishing the best results possible. This may be undertaken with confidence, and though he may not accumulate a vast fortune or attain to the highest rank in his profession, yet he may by persistent effort lay by a snug sum and creditably serve those who entrust him with the care of their teeth and the surrounding tissues.

Outstanding success in the management of a rural practice is seldom attained save by those who are thoroughly competent. You will have but few transient patients, the kind that you see today and never tomorrow. Your lot will be cast with generation after generation of people either related by blood lines or marriage ties. To retain them as the major portion of your clientele you must win their respect and confidence, convince them that you are a safe counsellor, a good diagnostician, a thorough student and practitioner. You may learn that just as the lure of the golden west has led many youths away from the fertile and productive plains of Illinois, so will people, tempted by promise of railway and hotel expense, be induced to visit other localities where promises full of glittering generalities entice them.

Chicago citizens seek New York and Paris for dental operations; the residents of interior cities flock to Chicago; the smaller towns to larger, but in spite of the trek of these nomads, there remains in every community served by a capable dentist local work without end, to which years of diligent service will add many patients not residents of your own locality.

If the rural practitioners claim to preferment is based upon a sound foundation, a large per cent of these wanderers will return and you will find yourself more firmly entrenched than ever in their favor.

It is not within the range of possibility that any practitioner can adapt himself to the wants and whims of all the people he may meet. To cheerfully witness the drifting elsewhere of those incompatible to your comfort is one of the few delights vouchsafed the man of proper equipoise, to endeavor with all your might the successful management of every operation that falls to your lot is the highest attainment possible in professional life.

Few practitioners outside of the larger cities are permitted to assume the role of the specialist. The first requisite to success in the rural office is preparation for and an equipment covering practicaly all the varied operations that may be performed in any dental office. While this may prevent an operator from attaining that degree of efficiency rendered by the specialist, it otherwise has a broadening educational effect and should be the means of helping to produce a very high standard of general efficiency. Taken singly or collectively, located wherever they may be found, this is the most agreeable light in which we may consider the members of our profession. Thoroughly prepared for every case that presents, with a comprehensive conception of the value of the services rendered, we will command the respect of the community in which we live and lay the foundation for a life of usefulness not surpassed in any other profession existing today. Recent developments have very materially increased the duties of the general practitioner. Oral prophylaxis has become a household word with a large per cent. of the intelligent people throughout the land, and bids fair to interest an increasing number as the educational propaganda becomes more general. Rural practitioners should enjoy all of the benefits, both educational and otherwise, that will naturally follow a more complete knowledge by the public of the dangers of faulty mouth conditions and the necessity of proper care of the oral cavity. In addition to the heretofore routine duties add this new and extensive line of work and there will be very few dentists whose time will not be fully occupied.

Estimating the number of people in need of dental service in proportion to the number of practitioners and making due allowances for the interest awakened by the present agitation, we are inclined to feel that but few communities will be overcrowded with dentists. In fact, it seems that our profession will be overtaxed with work. Reflect for a moment upon the varied operations that you could properly suggest to your patients within one month's time. Estimate the result of the present effort to teach the people that the oral cavity is the "gateway" of the body. That health and bodily comfort are only made possible by maintaining a healthful condition of the mouth; that it is our special privilege and duty to combat caries, to arrest the progress of disease, to correct irregularities, to give surgical aid to all injuries of the face, to construct useful and presentable substitutes for lost teeth and you will be overwhelmed with the prospect for arduous labor.

If we succeed in convincing the public of the need of dental service we must endeavor to fully prepare ourselves to scientifically render such service. Just now we are pressing our claim for professional eminence. Nothing will so certainly command the respect and confidence of a critical public mind as complete and scientific mastery of the diseases we are called upon to treat and the skill we exhibit in restoring to usefulness impaired dental organs. More than this—from henceforth we are to prevent disease and promise an increasing immunity from decay to our patrons. We are to occupy the twofold position of teacher and dentist. An intelligent conception of how to care for the teeth is the first lesson we should teach our patients. A beacon light upon the shores of neglect, it will prevent serious complications, a boon to both patient and operator. Not that we would avoid grave responsibilities made necessary by prolonged neglect, but that we realize the value of early remedial measures in preventing the encroachment of disease and decay. Residence in the rural districts and smaller cities within the state should not prevent many of our younger members from engaging in scientific research. As a self-help it is unsurpassed and it is the sure road to public preferment. The facilities for conducting experimental work are now complete compared to twenty years ago and the urgent necessity for more volunteers in this line of work is made more apparent as we come in contact with students and investigators in other professions. Reference is made here more especially to the younger men, those who are recent graduates. Studies begun in college should be pursued in connection with practical office experience, and in time we will have the ripened student possessed of valuable knowledge, a credit to his alma mater, an indispensable professional scientist in the community in which he lives.

A proper classification of the operations we should or should not undertake in the rural office would eliminate a very moderate portion of the years' work. The only and it seems to me the safest rule to adopt would be one of efficiency. To state frankly that the case in hand could be more skillfully managed by some specialist is the honorable course and will in the end redound to the glory of the person so advising his patients.

The more remote from centers of population the dentist may reside, the greater the difficulties that will be experienced in persuading patients to seek the services of the most capable specialists. Under such conditions frequently one is compelled to proceed with the case rendering the best service possible. This is especially true in orthodentia, lack of funds and the prolong treatment required making it impossible for the patient to leave home. Fortunately many of the minor irregularities can be safely undertaken and when once completed give great satisfaction to the patient and friends and are a source of pleasure if not profit to the operator. Every office should be fitted with materials for the prompt adjustment of fractures, of infreqeuent occurrence, when the case does present, it is gratifying to be ready to give immediate attention. In the small community in which the writer resides, nine fractures have occurred. One was attended by a physician, one by a neighboring practitioner and the remainder by myself. In my own experience it is a source of comfort to record that perfect occlusion followed the treatment of each case and that only two teeth were lost, and they were both badly fractured. I trust I may be pardoned for this personal allusion. Reference is made to this particular class of cases to show how necessary it is for the rural practitioner to prepare for every emergency. The daily routine of cases will be met as each operator deems best. The degree of success in mastering them will be a fair index of his knowledge, and willingness to pursue closely every detail requisite to the accomplishment of desired ends. Grant that a large per cent. of licentiates have all of the desirable characteristics that members of our profession should possess, that they are surrounded by a dense population from which to select a suitable clientele, what more can be done to aid in promoting the welfare of the country practitioner? After our first and most important obligation, that of rendering proper and capable professional service to our patients has been fully met, we still have another and almost, if not equally important obligation to fulfill, namely, the necessity of obtaining from our efforts an income commensurate with the outlay of time and talent we are investing in the work. If we fail to do so it is our own error. Nowhere in this broad land does an intelligent public expect to find any class of skilled artisans or professional men who fail to exact proper fees. The steady advance in the cost of supplies and the daily increasing cost of living have made necessary higher fees for professional and business service. Many dentists have failed to appreciate these conditions and are so conducting their business as to deny themselves proper remuneration and at the same time are hindering those who are entitled to full compensation from obtaining the same. No better evidence of the folly of such a course need be asked for than to observe the list of prices charged by different operators for practically the same work in the same districts. The operators, in point of competency, cost of living, and materials used may belong to the same class and yet the fees collected will vary so widely as to demonstrate to the public, who always compare notes, that there is something radically wrong. The hour is at hand when we should fully realize that there is and should be a community of interests existing throughout the whole profession.

A careful survey of the field discloses an anomalous state of affairs. It is impossible to view the situation completely surrounded by the narrow walls of one's own office. In spite of ultra conservatism and a life long habit of accepting the modicum that has fallen to our lot, most of us glancing through the window into the outer world, behold the strides made by friends no better endowed than ourselves in all of the attributes that help to make good in life's struggle, and there passes before our visions financial results far surpassing our own. There is need of a thorough awakening on this subject in many of the rural districts.

The only remedy for this condition is the promotion of a closer fellowship between members of the profession. Heart to heart conferences based upon a desire to ascertain what is just and proper will be fruitful of desirable results. It is not sufficient for us to read daily the magazines and newspapers crowded with articles recounting the wonderful achievements of captains of industry. We have interests of our own that need attention. Frequent private or society discussions will clarify the atmosphere and help to produce a more intelligent conception of the value of our work as well as promote a more enlightened understanding by the public. One of the first to openly discuss this particular condition existing within our profession, I have observed how general has become the agitation throughout the nation and am hopeful that in the very near future we shall have come to a practically permanent understanding that will be fruitful of correct results. The greatest stumbling block in this forward movement is the man who shuts himself within his own office and blindly pursues a course neither helpful to himself or beneficial to his fellow practitioner. Concerted action will not only produce a better financial return for the great mass of the profession, but will prove the greatest aid to those desirous of becoming more capable dentists. In numerous ways, acting collectively, studies may be successfully pursued and knowledge obtained that is indispensable if we wish to rank high in our professional standards. Timidity should not prevent attendance upon dental meetings, neither should lack of funds. One had best borrow the money if collections are dragging. Numbers of your neighbors that have had the good judgment and courage to close their offices and go at any sacrifice to the regular conventions will testify that no act during the year's work has proven so profitable, judged from every standpoint. Our district meetings should be arranged by some one familiar with the train service, making it possible for the greatest number to attend the session and return to their homes with the least outlay of time and money.

One of our great railroad presidents in a very able address delivered some months ago urged an alliance betwixt the producing farmers and those who transport the products of the soil to the market, the railway corporations. He produced facts and figures —conclusive evidence of the advantages to be derived from a closer union of these working forces in the upbuilding of our national wealth.

Frequently it has occurred to me that the manufacturers of the supplies used in our offices and the members of the profession should be brought nearer together. Progressive dentists should be encouraged by the manufacturer.

If it were possible to obtain the services for only a few days of a representative from a reputable wholesale house who could install new appliances and give private demonstrations in our own laboratories of new and improved methods, we could well afford to pay moderate fees for such instruction. First of all this would prevent indiscriminate purchasing of all kinds of useless appliances. Next it would be a school of instruction on a small scale that would open the way to a prompt and accurate technique that would eliminate many discouraging failures that so frequently retard and hinder our early efforts when venturing into new and untried laboratory work. A moderate expense so incurred by the rural practitioner would be money judiciously and profitably expended.

The manufacturers' exhibits given annually are helpful to those who avail themselves of the opportunity to see them, but demonstrations in one's own office on practical cases would be far superior and permit a closer study into numerous details not possible at purely table clinics.

Attendance at the dental conventions and manufacturers' exhibits followed by demonstrations in our own offices made by highly proficient operators would be the very acme of good business management.

Anything and everything that will make better dentists of us, that may aid in lessening the cares of the day and in the end produce a higher standard of excellence in our professional service with the least outlay of nervous energy should be eagerly sought by an already overtaxed profession.

The financial outlay would be a mere bagatelle compared to the benefits derived therefrom. The railway trains are transporting demonstrators of appliances and machinery used in all of the industries throughout the land and the only visitor to the rural dental office is the salesman who periodically invites you to his sample rooms where he exhibits to you a wagon load of promiscuous materials and appliances, and in reply to inquiries, with a few notable exceptions, ventures only a guarded reply as to their uses.

It was my good fortune for years to welcome to my office the representative of a wholesale physicians' supply house, who had studied with the greatest zeal his line of work. Possessed of a brilliant mind, he mastered the smallest details of his business. He could tell you where the plant grew from which the drug was made, how the medicinal properties were obtained, and give you a very comprehensive statement of the cases in which its use was indicated and state specifically the dosage. Modest and retiring in his make-up, yet ever ready and thoughtful, he was a power for good the value of which runs beyond computation. Often the thought uppermost in one's mind after his call was: How blessed are physicians and their patients for this man's visits. In this strenuous age when we seem to be accomplishing almost the impossible, every factor that aids in brightening our wits, every ray of light that can be thrown upon the task before us should be welcomed with a generous impulse. In the short time properly allotted to a paper, which is a small part only of a very comprehensive program such as is formulated for a meeting like this, it is impossible to discuss at great length, even a topic that is so vital to a very large per cent. of our profession.

Looking back forty years there passes in view many historic names and faces that have brightened the pages of dental history. Not a few of them have been residents of rural communities and their achievements have been a source of pride to the whole dental profession. A study of their chief characteristics discloses the fact that they not only burned the midnight oil in their private studies, but that they mingled freely with their fellow practitioners.

The rapid advancement of the dental profession, penetrating every department of a rapidly widening field of operations may seem to the new beginner bewildering—almost kaleidoscopic, but it is well to keep in mind that every advancement made is the result of persistent application made by some diligent, earnest student.

The most hopeful sign of the times is the growing percentage of practitioners who are dividing their leisure hours between pleasure and study. This more than any other professional aspect augurs well for our future. There are perhaps many members of our profession occupying such an exalted plane that in no respect need we ask for improvement, but to most of us there is room for persistent attention to all of the details that promise scientific, financial, or fraternal betterment.

Ere long we shall as a profession come into that happy estate where the day's toil shall be a moderate number of hours given to the skilfull management of purely scientific service, fully appreciated by an educated public. The remaining time will be divided between study and the well earned pleasures properly enjoyed by the competent and faithful operator.

In a greater degree than ever before the older and retiring members of our profession, after long drawn out careers more or less useful, with hearts full of devotion to their life's work, one by one prepare to surrender, and welcome to the ranks as worthy successors the new recruits drawn from the ever increasing list of graduates. Each succeeding generation should witness marked advancement, the natural outgrowth of persistent study, faithful devotion to the science of dentistry, and last, but not least, a constantly growing good fellowship.

SOME PHASES OF BACTERIOLOGICAL INFECTION OF THE HUMAN MOUTH.*

BY GEORGE W. COOK, D.D.S., CHICAGO.

There are only two phases of the bacteriology of the mouth that necessarily interest the dental profession; one is fermentation, and the other is the factors that cause the change morphologically and physiologically of the soft tissues themselves. I have selected for your consideration some points in both of these phases. First, we understand, in this connection, that fermentation is the action of unicellular organisms on substances rich in carbon. This process can only be established under conditions in which the bacteria or unicellular organisms can come in contact with the substance, and the compound that they break up must be in quantities that it can be acted upon by these unicellular organisms. The carbohydrates that they act upon must be only about a certain percentage of dilution. When the quantity goes beyond a certain percentage the bacteria are unable to act, because a certain per cent. of sugar is known to be an anti-substance to the action of bacteria. This anti-action to bacteria varies so considerably that it plays a very important part in the process of fermentation. The saliva contains all elements or chemical constituents essential for the growth of bacteria, but the percentage may be out of proportion for the proper fermentation processes to be carried on.

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We take the human saliva under ordinary conditions and it contains a certain amount of mucus or gummy constituents that vary to a very large extent in the gelatinous compounds they contain. It has also been observed that the bacteria themselves are capable of producing a certain amount of these colloidal or gelatinous substances, which are also not very constant in the percentage of gummy substances. It has been my observation, in the mouths of twenty-seven persons, that whenever the gummy substances are present in large quantities, coming directly or indirectly from the salivary secretions, the bacterial flora have not such an extensive number of forms or species that can be cultivated. In other words, the mucoid-like substance in the saliva has also a very important relation to the quantity and quality of the action of bacteria.

Dextrins or hexoses are chemical compounds that belong in very close relation to the products of bacterial action and also the products of the salivary glands, as well as the mucous glands of the mucous membrane. Galactose is not uncommonly found among some of the groups of hexoses. The galactose forms that are found in the saliva are very seldom found among the bacterial gummy products.

The staphylococci that are found in the saliva of a very large number of people become grouped and have a considerable tenacity in hanging together and starting a nucleus, getting into the entanglement a large clump of bacteria of all the species in the mouth with the mucoid-like substances that hold them together.

When such a group is transferred from the saliva to the proper culture media, it will form colloidal-like plaques, especially on the thin surfaces of the dentin. They become adherent to dentin or to a piece of hard oak wood. There seems to be in the experiments that I have made but one single chemical element that prevented gelatinous substances from forming and that was a one per cent. solution of sulphate of calcium.

In the presence of the sulphate of calcium these colloidal plaques could not be formed, and after they had been formed a one-half of one per cent. would cause the disintegration of a well formed plaque of mucoid substance.

One of the principal things in the formation of gelatinous plaques by bacteria is a carbo-hydrate substance.. The presence of nitrogenous substance in excess of a certain proportion with carbo hydrates precludes the possibility of extensive formation of gellatin-like substance. There is one point that we must settle in the discussion of the so-called gelatinous plaques. Do they originate from the salivary secretion or are they the product of the bacterial cell? According to all the investigations on fermentation, we are forced to the following conclusion, that bacteria that produce dental caries form their own gelatinous substance.

This I have demonstrated with a great deal of difficulty. Plaques were selected that were formed between the teeth in inaccessible places. After washing the teeth and surrounding parts with fifty per cent. alcohol, scrapings were taken from these parts and subjected to staining, and once in a great while it was possible to bring out the mucoid-like substance that surrounded the bacterial cells.

It has been stated by some able investigators that the mucoid compounds that are formed into plaques surrounding bacteria, or for the purpose of encapsulating a group of bacteria, must be formed out of the decomposition of grape sugar, or some of the derivatives. Whether further investigations will prove this to be a fact is a question that will be settled in the negative, without any question of doubt on my part.

Some of the fungi are capable of decomposing carbohydrates and forming a mucoid or colloidal substance out of carbohydrates that do not contain any grape sugar.

I am of the opinion that the bacteria in the mouth can form a mucous-like product out of certain contents of the mouth. I think it might be under some pathological conditions, especially in the diabetic cases or persons subject to the improper physiological fermentation of carbohydrates.

The bacteria in the mouth might decompose the mucus that is formed in the human body and is an expression of certain abnormal digestive processes. Under those conditions the bacteria in the mouth would decompose this carbohydrate or dextrine substance into a mucus or colloidal substance that produces these plaques on teeth. I have observed that where an individual is carrying on a perfect physiological equilibrium and the mouth is kept moderately clean that those persons do not have the capsulated or mucoid substances around the bacterial cells as they do in certain other conditions, which I am unable to discuss at this time. Suffice it to say that we must differentiate between the mucus of the bacterial cell production and the mucus that is the product of salivary secretion. The mucus-like substance that surrounds the bacterial cell is easily permeated, according to all laws of electrolytic endosmosis and exosmosis, while the mucus in the saliva is of such a physio-chemio constituent that it will absorb or take up chemically certain of the elements that would carry on a fermentative process by bacteria. It might be under certain circumstances that bacteria could ferment gluco-proteids which are present in the saliva of the human individual, but out of that they could not convert a gelatinous substance for their own protection. But they might be able to change some of the products of the saliva to a decomposible substance in the presence of the oxygen of the air. I have called attention previously to the mucinic acid formation in the mucus secreted or excreted by the mucous glands, and thus producing what we call erosion.

At this time I wish to establish my working hypothesis of the difference between what I consider erosion as produced in the mucic acid fermentation, and dental caries; first, erosion as produced in the human mouth is the result of a physio-chemio process that goes on in certain glandular substances in the mucous membrane, which is purely a physical and chemical change that takes place in certain carbohydrate substances of the so-called mucous glands, in other words, it is a pathological condition of certain mucous glandular substances that can take place in any mucous cell under circumstances with which we are not familiar. Dental caries, as elucidated by Miller and Black, is purely the product of bacterial cell action.

This phase of bacterial action is undoubtedly a very complicated chemio-physical change that is produced by bacteria under favorable conditions for certain fermentative processes.

In the group of bacteria present in certain mouths we find that certain of these bacteria in pure culture will cause technical fermentation very much in the same way as we observe it under other circumstances than that in the mouth.

Study and investigation leads me to the conclusion that the formation of gelatinous plaques and its elucidation by G. V. Black is one of the most scientific explanations of the process of dental caries that has ever been promulgated in the science of fermentation.

There are certain bacteria in the mouth that in the presence of other bacteria can not establish the fermentation that is necessary to form the gelatinous plaques and attach themselves to the surface of the enamel, and carry on fermentation there independent of the external world, for the simple reason that the chemical constituents of the saliva render the surrounding media unfavorable for the fermentation of the so-called gelatinous substances of the bacterial cells. Dr. Jones called attention to one important feature and that is the permeability of the so-called gelatinous plaques. In growing bacteria in large quantities and in cultures taken from the mouth, one is struck with the peculiarity with which certain of these bacteria become encapsulated, while others stand out free from all mucus-like substances.

In growing bacteria in large quantities from the human mouth, it is very interesting that many of the organisms do not grow artificially except on certain special media. The time and place and culture media would not interest anyone here and I shall not repeat that at this time.

Suffice it to say that the growing of bacteria as they are found in the oral cavity is a process that leads to considerable confusion, inasmuch as the saliva and mucus secretions have a dextrine compound or a carbohydrate which they can convert into a gelatinous-like substance and out of which in the majority of instances they produce gelatinous plaques first named by Dr. Black.

It is not an easy matter to cultivate these bacteria and produce the typical gelatinous plaques that one finds on the teeth in mouths of persons suffering from dental caries. Artificial cultivating of these organisms is a difficult matter because first you can not produce exactly the media that they are habitually used to when they are growing in mouths that are unclean, and especially individuals who suffer from some disturbed metabolism of the body in general.

Vignal isolated from the human mouth seventeen different kinds of organisms that he investigated especially as to their growth and their general morphology and followed out an investigation as to their behavior on substances rich in carbohydrates.

A very interesting fact was revealed: 7 of these organisms dissolved albumin; 5 caused albuminous substances to swell up and become somewhat transparent; 10 dissolved fibrin; 4 caused it to swell up and become transparent; 9 dissolved gelatine; 7 coagulated milk; 6 dissolved casein; 3 transformed starch; 9 converted lactose into lactic acid; 7 inverted crystallized sugar; 7 fermented glucose and partially converted it into alcohol.

According to Vignal's description of his work, I followed out the experiments and my findings corresponded very closely with Vignal's, but I found all of these organisms except three had the power to convert out of carbohydrate substances gelatinous or mucoid substances of great tenacity, and when it become adherent to ground glass or enamel of a tooth it was not easily removed.

An experiment that I tried was by attaching a colloidal coating over the surface of ivory, and enamel when I could secure a piece of enamel large enough, confining under this the various species of these bacteria, and under this colloidal plaster bacteria with a given amount of sugar solutions and various other starchy compounds, I found that in the majority of instances the fermentative process would go on until it was all used up. Confining these on small pieces of ground glass in a culture media where the bacteria could not get out from under the plaster they could ferment a certain starch or carbohydrate and in a number of instances they produced the various acids that were recognized as organic acids, such for instance as butyric, propionic, acetic, gallic acid, and most of all lactic acid. Seven out of the seventeen produced lactic acid fermentation, but before the lactic acid was found in a number of cases there was propionic acid, and then it was converted into lactic acid.

The conditions under which they were grown materially influenced the kind and quantity of acids that they would produce. For instance, various sulphates and especially the sulphate of calcium apparently would prevent acid formation only in very minute quantities and some times it arrested the fermentation entirely.

I was unable to determine whether or not the sulphate of calcium produced a coating over the gelatinous membrane and prevented endosmosis and exosmosis, or whether or not it had an effect upon the organisms themselves to the extent that fermentation was arrested through the inactivities of the organisms. This is a question that is yet to be settled.

Suffice it to say, however, that the sulphate of calcium seemed to have a most deleterious effect upon the acid formation. It also had a very inhibitory action on the pathogenic properties of bacteria. A 3½ per cent sulphate of calcium placed in the culture media and growing pathogenic bacteria in that continually transferring them from a media where they had grown by a fresh culture plate, the pathogenic properties of these organisms were materially diminished. As to just what effect the calcium sulphate had upon the production of toxins by bacteria was not determined. It may have been that the toxins were simply neutralized as fast as they were formed, or it might have been that the organisms themselves were unable to produce the toxic substance in the presence of sulphate of calcium when added to the amount from 3½ per cent to 7 per cent.

A further investigation was made as to what potassium ferrosulphocyanide had on the growth of these organisms and it was found that the productions of lactic acid under those circumstances were not restrained by any quantity of potassium ferrosulphocyanide, that the bacteria would grow luxuriantly in it; neither would it have a soluble effect upon the gelatinous formation that they will produce.

I will pass around some drawings from an absolute reproduction of some of the organisms. They were isolated from the mouth showing the gelatinous-like capsule in which they were enclosed. These were all grown in a one per cent of potassium ferrosulphocyanide, and it is very evident that it had no effect upon the gelatinous-like substance in which the bacteria themselves were encapsulated.

Another experiment was tried on an individual who was suffering from dental caries. The young lady was 26 years of age; her teeth were dissolving away almost in the same manner as snow would melt under the warm sunshine. The potassium, ferrosulphocyanide, as prepared by Parke, Davis and Company, was administered and bacteriological growths were made after the administration of the agent, and they were followed up for a period of six months. The teeth were not cared for in any way, as the girl had fully decided she would have the teeth removed. I simply treated them and kept them from aching, but avoided as much as possible using any antiseptics and after six months time the mouth of the patient was in as sad a predicament as it was when I began, and furthermore, the bacteria thrived in the same manner that they had before.

In the following up of this case particularly, it was interesting to note that at one period the bacteria that were isolated would have a very much greater power in producing lactic acid than they would at other times. I questioned the young lady a number of times if she used candy or other sweet substances, and it was reported that she did quite frequently, and the period when she used the candy the fermentation was not any greater than it was at the time she did not use it. Some kinds of bread would be fermented by some of these organisms in a very brief period of time, while in other cases they would not ferment the bread at all or to a very slight degree. The staphylococcus was pretty universally isolated from the mouths and it has the power of converting certain carbohydrates into acids. There was one strain that always would produce the same effect under the same identical condition and there was another strain that had no appreciable effect at any time in producing acid formation.

An organism isolated from the mouth of an unusually immune person had the power of converting artificially lactic acid in unusually large quantities, though there had never been any caries in the mouth of the person who was at that time thirty-one years of age.

The bacteria that are in the mouth under ordinary circumstances and would under favorable conditions produce fermentation as well as the formation of gelatinous capsules in which they were enclosed, would under artificial conditions produce only one or the other.

A number of strains of bacteria that have their natural habitat apparently in the interproximal spaces and in the gingiva of the gum have the greatest power when isolated artificially of producing lactic acid fermentation. Plastered on the enamel of the tooth, and confined by the colloidal plaster as above described, and placed in the culture media containing glucose, they would cause a roughening of the smoothest enamel that could be found in the course of twenty-four hours and even in some instances the entire depth of the enamel along the gingival line was penetrated to the dentin in seventy-six hours. This was a special strain of bacteria, as I said before, that were isolated from the entirely immune mouth. These organisms kept up their fermentative properties after being cultivated for a number of months, and handled under almost all circumstances that would produce the fermentative process in the most unique manner and sometimes under the most unfavorable conditions.

The pathogenesis of bacteria are some of the interesting phases about the organisms that grow in the mouth. If they are allowed to float around promiscuously in the mouth and saliva they will soon lose their pathogenic properties, or to a certain extent at least, but those that grow or are isolated from the free festoon of the gum in the interproximal space sometimes have the most pathogenic effect when injected into animals.

It might be said in this connection that the animals inoculated with a number of bacteria that are constantly found in the mouth will not show a very deleterious effect except in a very slow manner. Many times, however, you think the animal has been converted and is not going to be affected by the inoculation, it will become lame and the joints will become swollen and sometimes a considerable edematous condition takes place in all the lymphoid tissues and in the course of a few months the animal may die from what would apparently be a rheumatic condition.

Much has been said in recent years about the peculiar effect that the mouth bacteria have on the general system, especially when they are present there for any considerable time, and I think it would be impossible to emphasize too much the very important fact that the bacteria of the human mouth are a greater menace to health than was formerly recognized. Out of 160 persons whose mouths I was able in the course of fifteen years to study, some a great number of times and other mouths I would only get to see two or three times to make a bacteriological study, it is surprisingly a fact that animals inoculated with the bacteria from the human mouth are almost universally affected to the extent that they eventually die from the inoculation.

As an illustration, a woman whose mouth I had the privilege of seeing a great many times and who was constantly in accord with my investigations on her mouth, twenty-six animals inoculated from her mouth showed signs of sickness inside of five days. and twenty-one animals died inside of six months, with cardiac lesions, and in three cases the staphylococcus was isolated from the pericardium. Five of the animals died undoubtedly from a fusiform baccilli that was described by Vignal a number of years ago and the spirochete that was recognized by Miller in the saliva and was given the name of spirochete dentium. So far as I know up to the present time, I was the first to isolate in pure culture this spirochete, and it has very much of the same characteristics as the spirochete pallidum of the syphillitic theme.

However, there is some difference in these two organisms, but it would be useless for me at the present time to burden you with the time to go into details regarding this bacteriological investigation. Suffice it to say, that the method will be published in this paper.

In my investigations of bacteria of the human mouth, there is one thing I can say with certain positiveness and that is that there are thirty-six bacteria that are pretty universally constant in all mouths.

The observation also revealed the fact that many of these organisms have the power to decompose carbohydrate substances into a gelatinous compound of a dextrine nature which can assist materially in the production of acid fermentation.

Most of these bacteria will gather around the necks of teeth in a sort of clump. There will be a number of specie in this mass and they will apparently grow together and produce certain fermentative processes together and they will be constantly enwrapped or enclosed in a gelatinous bag or protected by a gelatinous substance surrounding the bacteria and this gelatinous substance will always become adherent to any foreign agent that remains constantly where they can come in contact.

I have isolated some of these organisms off of artificial plates worn in the mouth, but they are more constantly found secreted around the gingival portion of crowns for abutments of bridges especially, but they are found frequently around the gingiva of artificial crowns especially where gold is a protecting agent in the free margin of the gum. The organism found there is always of a very virulent nature and rabbits and guinea pigs inoculated from this locality soon succomb to the action of these bacteria. The longest that any one animal lived after being inoculated with these organisms was thirteen days. The average die within six days after inoculation.

Any small foreign substance placed around the tooth down to or under the free margin of the gum acts as an agent for the accumulation and incubation of bacteria and universally causes a mucoid degeneration of the mucous epithelium in that locality, and the bacteria will inhabit all the mucous follicles and sometimes down into the connective tissue of the peridental membrane or periosteum of the bone.

When they have remained in that locality for any considerable time, producing this very destructive degenerative process, they are extremely virulent when put into animals of a susceptible nature. Gold apparently is a great protector of these mucoid substances and it will adhere to the gold almost as tenaciously as it does to the enamel of the tooth. Porcelain really does not give the same favorable habitat for these bacteria as does gold or some of the other metals.

Some further observations were made along this line to the effect that sodium citrate, calcium sulphate, potassium tartrate were three agents that seemingly would have a dissolving influence on the bacteria in that particular locality. I might say especially sodium citrate and the potassium tartrate have a dissolving influence on the mucus that has formed and prevents the mucus from forming in a way above described.

The sulphate seemingly has no power to interfere with the formation of the gelatinous substance, but it apparently prevents the fermentative process that is quite common in these bacterial growths.

As I have previously said, the sulphate of calcium apparently has deleterious effect upon the bacteria, but according to the physical conditions of a dialyzing membrane the sulphates have a very profound influence upon this physical process that we call endosmosis and exosmosis, while the citrate of sodium and the tartrate of potassium has a dissolving influence upon the mucoid substance that has formed around these bacteria and in fact it prevents the mucus formation under favorable circumstances grown artificially.

Dr. C. E. Jones has been the one person who has adhered very strictly to the dialyzing properties of the gelatinous plaques and my conclusions have confirmed that he is quite right when it comes to that phase of the question: that the dialyzing properties of the substance to be fermented and the membranous protection of these bacteria are two physical phenomena that are of paramount importance in the basic principles of dental caries.

THE WISDOM TOOTH.

BY DR. C. B. PLATTENBURG.

It is about time someone came to the defense of that much maligned tooth—the third molar, for a dentist writing to a dental magazine a short time ago said they were of no account, and another said before a jury in this city that he didn't know what they were put in the mouth for. Now, to my mind, they go to show that an all-wise Creator, devising everything for the best, foresaw the millions of ignorant parents who would let the first permanent molars to go by default, allowing them to decay in their children's mouths, saying they were "baby teeth," because they did not replace any others. This would leave a space unfilled. After a while the second permanent molar comes, but does nothing towards filling the space. But soon along comes the third molar, and it sets to work, pushing and crowding that second molar forward, forcing it into the space, and then taking the second molar's space itself and having plenty of room, developing into a good, strong molar, ready to do good service. I have seen many such cases where no one could tell that the first molar had ever been lost, and so has every other old practitioner. Of course, if a third molar finds a mouthful of teeth and its service is not required, and it has not room enough to develop itself. it is apt to sulk and make a nuisance of itself generally. But it has been there, ready to fill a want, if needed, nevertheless.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY MEETING AT SPRINGFIELD, MAY, 1912.

DISCUSSION OF THE PAPER OF DR. BLAIR ON "SOME THOUGHTS RELATIVE TO THE PRESENT STATUS OF DENTISTRY IN THE RURAL DISTRICTS AND THE OUTLOOK FOR THE FUTURE."

Dr. W. A. Johnston:

Dr. Blair probably doesn't know it, but in his own person he is the ideal dentist of the suburban district.

In sight of my home—in the center of a forty-acre field—is a hard maple tree, tall, symmetrical, wide branching, beautiful,—whether in its fresh spring suit of green or its brilliant autumn robe of red and gold.

Firmly rooted in fertile soil, caressed by summer breezes, bathed in unobstructed sunlight, unhampered by crowded branches, or other trees, unharmed by the drought of summer, unhurt by winter's fiercest blasts, it is a landmark for all the country side, and a target for innumerable cameras.

Nearby is a dense wood where many trees grow tall and spindling, striving to reach the sun and air, developed only on the south and west sides, where conditions are favorable for growth, with only here and there a tree that by reason of an earlier start or some favoring environment has grown larger than the rest.

As I look back through the years of my connection with this society, I see many a village dentist who reminds me of my neighbor's maple tree.

Dr. Gilmer was noted in Quincy before he went to Chicago, Dr. Crouse was able, almost as soon as he left Mt. Carroll, to command the highest prices of any one in Chicago. Dr. Newkirk's fame was assured before he left Wenona, Dr. Patrick suffered no loss of reputation because he lived in Belleville. Dr. Black made Jacksonville famous because of his work there.

How many of us would ever have heard of Waverly is it were not for Dr. Blair?

After all, it is the man who counts and not the number of his neighbors.

It is true that the large cities present great opportunities, but with the easy transportation referred to in the paper, it is just as possible for the country dentist to go to Chicago to the clinics, and manufacturers' exhibits, or to the local society meeting in a nearby town, as it is for the patients to make the trip when in search of the latest and best in dentistry.

And right here let me say, that every time I have shut up shop and attended the meeting of the State Society, I have found that it paid me in dollars and cents as well as intellectually and socially.

This brings us around to the money question and the subject of baseball. Connie Mack might surround himself with all the Bakers, Browns, Cobbs, and Wagners in the business, but if each one played independently and did his best, Connie would never win a game except by accident.

It is team work that wins ball games, and it will be united effort on the part of all the dentists in a certain locality that will lift the profession to higher planes of usefulness and better remuneration for services rendered.

In the village that surports me there are about fifty dentists and all but about half a dozen belong to the Dental Society.

It will not do much good for Dr. Whalen and Dr. Luthringer to try to educate the public along the lines of prophylaxis, oral hygiene, high class dental services and proper remuneration for the same, if the rest of us content ourselves with pulling teeth for 50 cents and putting in amalgam fillings for a dollar per.

The Local Society has accomplished wonders in our town and we are just beginning to find out what we can do by united effort.

It seems to me that the salvation of the dentist in the small towns depends upon himself first of all, then upon his willingness to be progressive, and lastly upon his co-operation with those about him to place the profession of dentistry where it belongs, among the learned professions and the skillful arts.

Dr. Grafton Munroe:

With the increasing ease of travel and the prominence given to the mail order system there is no wonder that the people are rushing from the suburban and rural districts to the larger towns, putting these in competition with the smaller towns. The only thing that can stem this tide is the best all round efficiency which can be attained; and it is given such prominence in Dr. Blair's paper that it seems almost needless for me to endeavor to impress it more strongly. First comes "Fellowship" with our city brother—the city practitioner, and I must say that whenever I have been in the city it has always helped me and given me something by which I can help my patients; and then the fellowship of society meetings has always been a time for mutual improvement to all who attend them with the right spirit.

Second comes Efficiency—

The demand for efficiency is extending to all lines and while the fellowship above mentioned is but one of the aids which make such a quality possible it is largely up to the dentist himself by observation—concentration of thought and diligent study to make himself efficient, be he city or country dentist. As Dr. Blair has said environment has much to do with any man's success. And it is in gaining the mastery of the intricacies of general practice that develops the conscientious practioner along lines of highest efficiency. Deprived of the easy access to supply-houses the country practitioner has a chance to show his skill in the use of such methods given us by Drs. Roach and Royce for the development of proper shades of teeth by means of the oil stains and the electric furnace. Efficiency is not an attainment that must be trumpeted forth to the ear of the public through the press, but the influence of the appreciative patient will tell more for good and bring to the competent operator in a comparatively short time others desirous of his best efforts. So that the nomadic class of patients will often come home to find that a similar class of work has been done right at home for some of their own friends, who have found the man who was abreast of the times. It has been and still is a difficult question for me to decide as to how large an area or population should be required for the practice of a specialty, with the hope of success from one specialty, such as prophylaxis and pyorrhea treatment, orthodontia, crown and bridge work, or plate work. Surely the highest degree of efficiency is engendered by development along all lines, so that where the circumstances demand it the rural practitioner may render a valued service that otherwise would be prohibitive because of the specialist's services being beyond their reach.

It might appear reasonable to some that a devision of one's time could be made so that a specialty would claim his exclusive attention during certain portions of time—for instance—general practice in the morning and specialism of pyorrhea treatments and prophylaxis in the afternoon. After such divisions of time were known, such cases could be directed to that office at the special time. I would be glad to refer cases of pyorrhea treatment to bona-fide practitioners of such a specialty, the only contingency of such reference would be that he would extend a like courtesy in referring all other work back to the general practitioner from whom the patient came. Every conscientious practitioner should and doubtless does take it as part of his duty to refer to a competent specialist those cases which he sees are plainly beyond his efforts that would bring him credit. Helpfulness should be associated with the attaining of credit. If Dr. Blair had not felt certain he would have gained credit in the fracture cases refered to he would not have undertaken them. His efficiency was proven by his preparedness to meet the emergency. Hence it becomes us all to study the conditions and demands of our several localities and by close application and conscientious discharge of the duties attendant upon the administrations of our professional skill, we will attain the efficiency at which we should all aim.

Third Division —

Appreciation and regard—will come largely in proportion to a man's faithful and conscientious discharge of duty and his own estimate of himself and his work. Hardly any practitioner does every piece of work that will be up to his fullest and highest expectations and hence his estimate of its value will not always be the same. This is largely due to the varied conditions that must be met in the idiosyncracies of different patients. It is a safer plan, however, to slightly *over-estimate* a conscientious effort than to *under-estimate* it. The difference in the appreciation of different patients both in voiced expression and in tangible evidences by willing payment of good fees are remarkable stimuli to higher efficiency. In view of the glaring publicity of advertising dental parlors and a remarkably willing public patronage it is seemingly a difficult task to see a level fee made between the recent graduate and one of years of experience.

Rapidity in work gained by years of application and experience often lead to a relatively higher estimate and result in the attaining of good fees. Aside from the idea of mercenary reward for work done the satisfaction of conscientious discharge of duty is a motive worthy of greatest stimulation.

For

When we in the morning wake for work,
  Let us be careful that we do not shirk.
Then when we close the day because of night,
  We can be happy because our work's alright.

Dr. Geo. D. Sitherwood:

I do not rise so much to discuss this splendid paper as to express my appreciation of the good words my friend Dr. Blair has given to you in this paper. I am very well acquainted with him, well enough to believe that he tries to live the golden rule. Last Sunday morning a young man said to me he thought the golden rule ought to be abrogated because so few people keep it. I said it is not so; that people who make this world grow, who do things, live up to the golden rule. The golden rule is one of our chief factors in the ethics of this society. If there is a place for a man to live the golden rule and enjoy life, it is in practicing dentistry in a country town.

Dr. Blair spoke of two things in his paper, about the man in the rural districts being a teacher and a dentist. That is true, and if a man is the right kind of a man as a dentist, he can do a great deal of good as a teacher in many ways, and especially in this thing we are talking so much about, educating children in prophylaxis and in keeping a healthy oral cavity.

One other thing he spoke about was fees, and also a closer fellowship. I find in my practice I get whatever fees I ask, provided they are not too high, and one of the advantages of attending this society is that when I go home I get a little higher fee. Last year a man came to me to have a certain amount of work done, and I told him it would cost him forty dollars. Then I went home after a society meeting, three months later, forgot what I told him the first time, and said it would cost him fifty dollars. He said to me, "You told me it would be forty dollars the first time." I replied, "Why did you not take me up then. It was too cheap." He paid me the fifty dollars. I felt better, and he felt better.

If time permitted I could occupy a whole hour in telling you of the many good things that have come to me in dental conventions. A good while ago I attended a great convention at Niagara Falls. In those days I had the good fortune to make the friendship of Dr. Frank Abbott of New York City, a man in whom I had a great deal of confidence and I really loved. They were discussing the subject of using a matrix, and some one called on Dr. Abbott to say something. He rose, and in a smiling, genial way said: "Gentlemen, I never use a matrix. I can prepare the cavity, fill the tooth, collect the bill, and spend the money while you fellows are adjusting the matrix." (Laughter.) That was a sort of oriental statement. It was figurative language. But I walked with him a little later about the Falls, and asked him if I had caught his meaning, and he said I had. Never do anything unnecessary in your work, but make every movement count. That is what he meant.

In the same convention they were discussing pyorrhea, or loose teeth. Some said the condition was constitutional; others said it was purely local. I remember seeing Dr. Morgan rise and say, "Gentlemen, when you extracted the tooth the disease disappeared." That is to say, there was nothing left of the pyorrhea after the teeth were extracted. That was merely a statement of facts, but it gave me something to think about. So when we attend conventions we get something to think about.

I live in a small town. It is inhabited largely by farmers. There are about thirty dentists in Bloomington. Some of my friends wonder that I enjoy good health. I enjoy good health in the dental profession because I do not happen to be a specialist. I work in the laboratory and do various things, instead of confining myself to one specialty, and when I have a difficult case, as Dr. Blair mentioned, that requires a specialist in that line, I send the patient to the specialist that I know can perform that operation. I really think the country dentist has the advantage over the city man who is a specialist in that he can be an all around dentist, changing from one kind of work to another.

Dr. J. W. Cormany:

Dr. Blair and I have been associated together for a great many years. I am a good representative of the country dentist. (Applause.) I wrote a paper at one time for this society entitled "The Beauties of Country Practice," and the highest compliment I received was that I was making a bold stand to sell out. (Laughter.)

Before I opened my office in Mount Carroll, after I had been practicing in California for two years, I went to Chicago and went to see Dr. Crouse. I had lived with him and polished his plates along in 1865-6, and I thought he could advise me. I wanted to move to Chicago. He said, "You go right back to Mount Carroll and stay there. That is the best place I know of." He hurt my pride considerably at that time. My head was swollen. My hat was too tight, but I went back, and, gentlemen, there is not one in this audience that enjoys life better than I do. I have made money, my friends. I have got a good practice, and I do not take a back seat for anybody. (Applause.) In the language of Dr. Taggart, "I am a city dentist practicing in the country." (Laughter.) I enjoy a practice of the kind Dr. Blair spoke of, that is, of the grandfather, the father and the children, and I am here to say that in all my practice in Mount Carroll, which covers a period of thirty-five years, there is just one patient for whom I extracted an upper tooth to make a plate for. The rest have all their natural teeth. Can any city dentist do any better than that? I do not believe he can.

There is one thing that came up today—and Dr. Johnson referred to it—and that is the immense amount of work the dentist has to do in the future. There are plenty of towns in the country where the dentist can make far more money than in the city, and if he is a single man, I will find a rich country girl, whose father has a large farm whom he can get for a wife, and not only have a practice, but in time have the farm. (Laughter.) I have a nice automobile, and I have everything that you could wish for.

I wish you all the imaginable success, and especially Dr. Blair, and in due course of time every member of this society will receive an orange from my orange grove. Do not put the time too soon. It is a beautiful orange grove to look at. I am very proud of it. I thank you. (Applause.)

Dr. G. W. Dittmar:

At the present time I am not a country dentist, although I was one a few years ago, and I appreciate the thoughts expressed by Dr. Blair in his excellent paper. I know the country dentist has many things to contend with that the average city dentist does not have, and that in the country you need to be a better dentist than the average city dentist is. (Applause.)

The subject of fees is always a stickler in country practice. The country dentist, I am sorry to say, does not get fees. I know when I practiced in the country the average price for an amalgam filling was one dollar. The price for cleaning teeth was one dollar, and the average dentist gives little attention to this all important operation, just as much, though, as the average city dentist does. The price for extracting a tooth was fifty cents, and cement fillings seventy-five cents and a dollar. These are not fees, but a common price, and the patient often knows what his dental bill is going to be before he does to the dentist. In the city it is different. We often measure the dollar by the way the other fellow makes it. If he makes dollars easy and fast, they are not of the same value to him as those of the fellow who makes them slowly and hardly, and we gauge our fees according to that standard. It may not seem absolutely right, yet from one standpoint it is right.

I did not expect to be called upon to discuss this paper, but I have enjoyed it and thank Dr. Blair for it.

Dr. Thomas L. Gilmer:

Dr. Blair asks me to discuss his paper. There are some reasons why I may say a few words on this most excellent paper of Dr. Blair. It may not be known to all of you that thirty-six years ago this autumn I moved out of my office in Waverly and Dr. Blair moved in. I hope I set a good example for him; at any rate he has made good and I have a certain amount of pride in his success.

Speaking of country dentists, I would say that we no longer have country dentists. The towns and smaller cities of our state, and this is practically true of all states, have by means of the city daily newspapers, the railroads, interurban roads, automobiles, telegraph and telephone, become an integral part of the greater centers. Through our district societies all progressive dentists are in close touch with the rest of the world, and through these societies there is disseminating knowledge and all new things which make for the betterment of the dentists in all parts of the state. The urban dentist has little advantage over the suburban dentist. We are all alike. The people of the country have been taught the value of good service and demand the same things that the city people demand.

I passed through Waverly in a little run down through the country yesterday. I saw at the station women wearing the same narrow tailor made skirts, the same peculiar basket hats, which are so prevalent in the larger cities, and I said, "Waverly is up to the times."

It was in Waverly I got my first experience in surgery. I speak of this to show that there is a demand for as wide a diversity of knowledge by dentists in the smaller cities as there is in the larger cities. I set my first fractured jaw in Waverly, and did my first cleft palate operation there.

The country dentist should be and often is in reality a broader educated man than his city brother, as there are no specialists in the rural districts. The country dentist must be a prosthetist, an orthodontist, an operative dentist, a surgeon, and everything else pertaining to dentistry. There are fewer diversions in the small towns, therefore a better opportunity for study and growth.

The suburban dentist does not get as large fees, perhaps, as does the urban dentist, but the difference in expense for conducting an office, and also the difference in cost of living, makes up for this. Country dentists do prosper financially. I have never heard of any money being raised to help a rural practitioner out of financial difficulties. I have known of this being done for city dentists, and city dentists, too, who have had large fees and who have been prominent in professional ways.

I know Dr. Blair has prospered, for he has a couple of good farms, also a good home. He is well-to-do, he stands high in the estimation of the Waverly people. They put him at the head of their public school affairs, they sent him to the legislature, and have honored him in municipal affairs in many ways in these thirty-six years.

Dr. Blair (closing the discussion):

I have nothing further to say—save one thing. I am sorry indeed that Dr. Gilmer visited Waverly during my absence. Had I been at home it would have been a great pleasure to have extended to him every courtesy—to have welcomed him to my home and fireside. During his six years' residence in Waverly he was a capable and conscientious practitioner.

He impressed the whole community with the value of dentistry, and as his successor I inherited this valuable asset. As practitioners we should keep in mind the fact that we are either knowingly or unknowingly building for the future. In possession temporarily of the fields we occupy, we should act well our parts, laying a foundation helpful to those who follow, and beneficial to the community in general. I thank you all for the kind things you have said about this paper. Let us draw nearer together as students and practitioners, let us strengthen the ties that bind us professionally and socially—having a keener regard for each other's comfort and welfare and the work of the dentist will be made less irksome and the community will be better served.

DISCUSSION OF THE PAPER OF DR. COOK ON "SOME PHASES OF BACTERIOLOGICAL INFECTION OF THE HUMAN MOUTH."

Dr. E. C. Jones, Chicago:

Dr. Jones was prevented by illness from attending the meeting or preparing a discussion.—(Ed.)

Dr. Thomas L. Gilmer:

It is embarrassing to be asked to discuss a paper of this kind without having read it, and especially since with a part of it I am not sufficiently familiar to discuss it at all.

In the first place, I wish to congratulate the writer of the paper; it is along the right lines. We must go a little deeper into such subjects than we have in the past if we do our whole duty to our patients. We discovered many years ago that when a cavity in a tooth was formed, the proper thing to do was to fill it. A little later on, becoming better educated, we desired to know why that cavity was formed, and Miller and Black and others went to work and found out; and now we wish to know still more—we wish to know what are the conditions favorable for the growth of those organisms which cause decay of teeth, also what part do bacteria of abscessed teeth play in causing disease in other parts of the body.

In connection with this paper a word of warning is timely as to the dangers from certain bacteria that are in the mouth as a result of improper treatment and improper filling of root canals. For a number of months I have been making a series of investigations to determine the bacteriology of chronic alveolar abscess. Doctors Billings, Davis and others tell us that chronic alveolar abscess, and other foci of infection, including the tonsils, produces endocarditis, disease of the joints, disease of the kidneys, and many other diseases. When we know the truthfulness of this statement we realize that we should know more of the bacteria that cause suppurating cavities in the jaws, which we call chronic alveolar abscesses, and the gravity of their presence. I am not willing to state to you at the present time just what the bacteriology of chronic alveolar abscess is, but will say this much: it appears to be the same in many instances as those which produce diseases of the heart, kidneys, joints and other important organs.

Dr. Cook in his discussion of the subject spoke of the streptococcus. We find this organism in almost every sample of pus examined from chronic alveolar abscess.

These subjects are not only interesting, but vitally important. If we were to take any audience of this size and have radiographs made from each one present, we would probably find twenty-five per cent of those present having pus cavities in their jaws. There are bacteria in each of these cavities. This being true, the owner is liable when his physical condition becomes lowered, to have as a result at least a toxemia. Possibly this will be the least serious consequence; under some circumstances the bacteria may pass from the abscess through the lymph channels and blood streams to the entire system, and cause an endocarditis, or some other diseased condition possibly of the kidneys or other vital organs.

I have a friend at the present time who has been ill for months. He had a streptococcus infection of one of his feet due to a slight injury. After the acute condition subsided, he had as a result an endocarditis. It has kept him in bed for seven months. For a long time we despaired of his life, but fortunately he is now slowly recovering.

We have the lives of our patients in our hands, and I suspect are killing many of them through lack of knowledge and improper treatment of chronic abscess. All abscessed teeth which cannot be cured by treatment or by surgical means should be removed. This is equally true of teeth badly affected with pyorrhea alveolaris.

Dr. J. N. Crouse:

I could not discuss the paper intelligently if I had heard it read, but I want to rise to mention a point or two that has come from my own experience, and from more observation I believe it will be confirmed. The state of the mind of a patient has much to do with changing the secretions and in destroying the teeth. In my own mouth for thirty years I had no cavities in my teeth to fill, and there was no decay going on. I was absolutely immune from decay of the teeth. My son became sick and died, great sorrow came into my family, and my teeth ever since have been decaying like wildfire. Every tooth in my mouth is getting very sensitive at the necks, and decay is going on, so that it is almost discouraging to try to have the cavities filled. I have seen the same thing in business men who have got into financial or other difficulties, where their teeth have been absolutely free from decay, but as soon as financial trouble came on their teeth began to decay rapidly. I have never heard this phase of the subject discussed before, and I only thought of it when it came home to myself. I believe it is a prominent cause of a change in the secretions of the mouth which is destructive to the teeth.

Dr. Edmund Noyes:

It is soaking into my mind, as it must be into that of the older men, that we have never realized the dangers that lurk in neglected abscesses and neglected diseased conditions of the gums and tissues surrounding the teeth, and that we must use greatly more care than we ever have done before to be sure that all of these conditions are cured or the teeth are removed.

Dr. J. E. Hinkins:

I am not qualified to discuss this paper, but since Dr. Crouse has called our attention to the condition of his mouth, I wish to say a few words on the subject. As you probably know, some of you, I have been doing some work for years along the lines of acid saliva, and I have been working along that line in a quiet way ever since I read a paper before the Chicago Odontographic Society two or three years ago. About six years ago I went through a process of financial disturbance, and up to that time I was like Dr. Crouse—had no trouble with my teeth, but after a siege of carbuncles my teeth went to pieces. In my practice I have observed a number of similar instances in persons who were under high nervous tension; one a woman occupying important positions, and Board of Trade men, railroad despatchers, and men of that class. I examined their buccal secretions, from the parotid glands, and found they were acid. I followed it up with a diet· The way I first discovered this was by washing the mucous membrane around Steno's duct with alcohol, inserting a tube and collecting the secretion from the parotid gland, and found it was as much acid, or more so, than the secretions of the mouth or the entire saliva. There was a time when we supposed that the acid condition of the saliva was due to bacterial fermentation, but upon investigation we found that the secretion from the parotid gland was as acid as the mixed saliva in the mouth. To verify these statements we took certain amounts of saliva and tested them for the amount of acidity, tartrated them, and took the same amounts of saliva and allowed them to stand in test tubes from ten or fifteen minutes up to several days, and found that the acidity was not increased. After reviewing the literature of everything I could find on the subject, my attention was called to this line of work by Professor Herter of the New York University, who requested me to conduct a series of experiments along this line and follow them out, and I have been following up the subject for three years. Every Monday night, if I am at home, I keep a record of the amount of urine I pass, its acidity, its specific gravity, and so on. I also take ten c.c· of saliva and tartrate that for acid against phenolphthalein. I have dieted for a month on vegetables; I have dieted for a month on red meat and mixed diets, and I find

I can control the urine absolutely by diet, but cannot control the saliva. If I go out to a banquet, and drink a little too much wine, it affects my saliva. Whiskey does not have any effect, but wine does. If I am under a high nervous tension or strain, the acidity of my saliva is increased. Some of these days, if I can find a little time and have the inclination to figure out these proportions, these tartrations mathematically, I will have this work published for the benefit of the profession. (Applause.)

Dr. G. W. Dittmar:

There were a number of points in this excellent paper that have not been touched upon; one important point that is held out prominently is this: In the process of dental caries a colloidal substance is formed to hold the bacteria in contact with the tooth, and under which the acid is produced which destroys the tooth substance; that caries of the teeth could be prevented by an agent that will either prevent the formation of this colloidal material or one which will readily dissolve it after it is formed, so that this colloidal material will not stay in position long enough to allow the acid to become concentrated enough to affect the enamel. That is the basic thought in the paper. Dr. Michaels was the man who told us that potassium sulpho-cyanide would stop or prevent caries of the teeth. Dr. Cook is inclined to think that this agent does not act on dental caries, and he recommends in its stead the use of calcium sulphate; three and a half to seven per cent of calcium sulphate is the agent that does act on the colloidal substance. As to how it acts he cannot say. Whether it simply prevents the formation of this colloidal substance or penetrates through it and in that way antidotes the acid, or whether it destroys the colloidal substance, he does not know, but he shows that the use of this agent has demonstrated to him that it does inhibit dental caries.

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EDITORIAL.

THE THIRD AUSTRALIAN DENTAL CONGRESS.

The editor of the DENTAL REVIEW had the pleasure of attending the Third Australian Dental Congress, held at Brisbane, Queensland, July 8-13, 1912, as a delegate from the National Dental Association and other organizations, and he came away with a very vivid impression of the activity in dental matters in that far away land. Never has he seen a more alert body of men than assembled for the five days' meeting at Brisbane; never has he seen the interest sustained for so long a time, and never before did he witness men more hungry for dental knowledge than those.

Distances are great in Australia and means of transportation not the best. For some of the men who attended the Congress it meant three weeks from home, but they were there in much larger proportion to given number of practitioners in the country than has ever been known to attend such a meeting in America. This speaks most eloquently for the enthusiasm of the profession in Australia and augurs well for its future. In addition to the delegate from the United States, there was also a very worthy representative of the British Dental Association in the person of Dr. F. Canton of London.

The most impressive thing to the editor was the evidence on every hand that the members of the profession in Australia are great readers. It is seldom that one encounters a body of men with so large a majority of them perfectly familiar with dental literature, both text-book and periodical, and the effect of this wide reading was manifest in the character of papers presented to the Congress. They were for the most part of a high order, both from a scientific and literary point of view, and showed an up-to-date familiarity with the various subjects which was most promising. The discussions were maintained with an activity and earnestness which kept the interest at the highest pitch, and not a moment was wasted during the meeting.

As was most appropriate with men who are seeking the latest methods in practice great prominence was given to the clinical part of the program, four entire mornings being taken up with practical demonstrations.

A significant feature of the meeting was the interest taken in it by the government. The patrons were His Excellency, The Right Honorable Lord Denman, P. C., K. C. M. G., K. C. V. O., Governor-General of Australia, His Excellency Sir William MacGregor, G. C. M.G., G. C. B., M. D., LL. D., D. Sc., Governor of Queensland, and the Honorable D. F. Denham, Premier of Queensland. The President of the Congress was Dr. E. T. White of Brisbane, and the Past Presidents of the First and Second Congresses respectively were Dr. Alfred Burne of Sydney and Mr. John Iliffe of Melbourne.

The Congress was opened by an able and learned address from His Excellency, The Governor, and the scene was a most imposing one. The hall was draped with the Union Jack and the Stars and Stripes, the latter a most gracious tribute to the delegate from America, who was deeply appreciative of the courtesy. It may here be recorded that never in all his experience has the writer received such whole-souled and delicate consideration as he did on this visit to Australia, and he looks back upon it with emotions which if reciprocated even in the smallest degree by those he met, must eventuate in a closer bond of sympathy between the two countries.

The social functions of the Congress were numerous and elaborate. The Queenslander is noted everywhere for his hospitality, and in this instance he surely must have broken the record. It began with a delightful little luncheon on the opening day, Monday, given by Presdient and Mrs. White, and ended at midnight on Saturday with a picnic to Nambour, sixty miles up country. The ladies' committee were especially active and kept the visiting ladies entertained every moment. Monday evening was given up to a reception by the President and members of the Odontological Society of Queensland to all delegates. Wednesday afternoon was set aside for the President's "At Home," which consisted of a trip down the Brisbane River on the government boat, the "Lucinda." On Thursday afternoon His Excellency, The Governor, and Lady MacGregor gave a reception to the Congress members and lady visitors at Government House, and it is safe to say that never before has any congress of dentists been more signally honored by the high officials of the government than were the members of the Third Australian Dental Congress. Not only this, but in passing it may be said that the government will print at its own expense the proceedings of the Congress and furnish a copy to each of its members. This was also done with the First and Second Congresses, and it speaks volumes for the interest which the Government takes in such matters. On Friday night a magnificent banquet was given with a most representative body of men in attendance, and a splendid atmosphere of professionalism and good cheer. It was nearly midnight when this was concluded, and from start to finish every moment was interesting.

All in all, the Congress must stand out as a conspicuous milestone in the development of dentistry in Australia—a development which is going on with such rapid strides that there seems no limit to what the future has in store for the profession of this glorious country.

In a series of articles now running in the "Desk" department of the Dental Review, the editor purposes considering in greater detail his trip to Australia and New Zealand, but he cannot close the present article without a word of thanks to his colleagues of those two countries for the unbounded courtesies which were showered upon him. Had he been a potentate of the realm he could not have received greater consideration or more unlimited kindness—as an humble citizen of the United States he wishes to express himself as being profoundly grateful.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS.

ANOTHER VACATION STORY.

(Continued from the September Issue.)

VANCOUVER, B. C.

Vancouver was our next stop after leaving Lake Louise, and I wish I could take time to write of some of the mountain scenery through which we passed, but if I do not hurry along I shall never get to Australia and back. Vancouver is a typically English town in one sense, American in another, and thoroughly Canadian throughout. Can you beat that combination?

I suppose we are all given more or less to provincialism and narrowness, particularly those of us who are accustomed to remaining much at home and who acquire at second hand whatever information we have regarding the characteristics and customs of other peoples and other lands. Travel is really the Great Educator, and one of the first things one learns in traveling is to respect the tenacity of habit among individuals and among peoples of different lands. But how a certain custom of England could have come over here and lodged itself in Vancouver—the one city in all this continent where it is in vogue, so far as I am aware—is more than I can quite understand. When I landed in Vancouver I came to the conclusion that every automobile driver, and cab driver, and bus driver, and street car man in the place was drunk. They were all driving on the wrong side of the street and apparently were oblivious to it. In no other city in North America with which I am familiar do the street cars run on the left hand tracks or the drivers take to the left side of the street and turn to the left. The thing was bewildering to a tenderfoot from the East. I was continually dodging things, and usually dodging in the wrong direction. I felt the need of a chaperone with me every time I went on the street. I am resolved on one thing—I shall never permit myself to get drunk in Vancouver. I had sufficient difficulty saving life and limb there while sober.

The American feature of Vancouver is the automobile. The streets are filled with them and nearly all are American made cars

—with a sprinkling of English and Canadian manufacture. The same thing obtained in Winnipeg, and when one considers that the buyer pays 35 per cent in duty over the regular retail price in the States it will be seen that some money is spent for automobiles in this western country. "And the worst of it is," said one gentleman to me, "that the Canadian manufacturer of automobiles adds that 35 per cent to the selling price of his car. If he would knock that off, or even split it with the buyer, it wouldn't be so bad." No wonder the Great Northwest voted strongly for reciprocity in the recent Dominion election. But the people out there will have automobiles no matter what they cost, and I saw many of the very finest and highest priced cars on their streets.

The dentists of Vancouver gave me a luncheon, and in many ways left me immensely their debtor. Dr. H. T. Minogue took a day off much under my protest, and aided me greatly in preparing for the long ocean voyage. Dr. J. M. McLaren, an old student friend back in Ontario in the early days, hunted me up the moment he knew I was there, and it did my heart good to look in his face again. We had both changed—but I am not going to write about that. The dentists of this beautiful city are all the right sort—all royal good fellows, and—yes, one royal good lady, who graced the table at the luncheon that day. I can never forget their kindness to me.

Another thing happened at Vancouver to "warm the cockles of my heart," and make it worth while to cross the continent if for no other occurrence than that. I was sitting in my room at the Hotel Vancouver when the 'phone rang and a voice said: "This is Bowes—do you remember?—Bowes of Ottawa." Did I remember! ! Away back in '81 I went to college in Toronto, and among the precious rascals of blessed memory in that class was this same Alex Bowes. Did I remember! ! Let me tell my readers something. In those days the Royal College of Dental Surgeons gave a gold medal for the best man in theory and practice. In '81 the contest was keen between Toronto and Hamilton as to which city should get the medal. I lived in neither city and was not considered a candidate on account of my short attendance at the college, having matriculated under the old indentureship which, after five years service as student in an office, permitted me to graduate in one year, provided I could get up the work. The other students were two-year men, and I had no idea of trying for the medal. If

I succeeded in passing my examinations and getting my diploma I was content. The examinations were conducted by numbers and no examiner knew whose papers he was reading. When the envelope containing the numbers was opened it was found that the dark horse from down in the country had won the medal. The Toronto boys hurried to congratulate me because I had taken the medal away from Hamilton. The Hamilton boys said I was a "crackerjack" because I had won from Toronto—just a bit of human nature, that's all.

But to me it was an embarrassing victory. In the first place the boys nearly tore the only suit of clothes I had off my back carrying me around on their shoulders, but this was not the worst. It was customary for the medalist to give a dinner to the graduating class and faculty, and I hadn't a dollar. "Never mind old chappie," said Bowes, putting his arm around me, "I'll lend you the money to give the dinner." Did I remember Bowes!! Remember him! When I got that phone message I flew down to the hotel lobby and —my! what a visit. We had not seen each other for thirty years, and for the last twenty I had lost trace of him. He had been in India, and only came back to Canada a year or so ago. What would I not give to have that old bunch of boys of '81 together again! Ah me! Ah me!

That day when the Vancouver men were giving me the luncheon Bowes sat across the table from me and I was telling about the incident of the borrowed money, and of my gratitude. A quizzical twinkle came in the rascal's eye and he said: "Say C. N., you needn't be so powerfully grateful for that loan. I won a good deal more than that betting on you for the medal." Think of it! Think of wasting thirty years of thankfulness on that precious scamp when it was tainted money he was lending me. But never mind—tainted money was not talked of in those days. and anyhow we all enjoyed the dinner fully as much as if Alex had earned the money filling teeth for the missionaries. So I have concluded to go on thanking him the rest of my life. Good-hearted, big, bluff Alex, not many men are built in his mold.

And now comes the day of sailing. Shall I ever forget it? In my previous article I spoke of the comfort of having friends, but never before did I realize the full significance of it. The steamer letters, telegrams, and night letters that came pouring in on us to bid us *bon voyage* were beyond belief. I had not thought it possible that so many of our friends, 2.000 miles away, were thinking of us. One of them in particular, apparently had been sitting up nights devising means for our comfort. Before we left Chicago he had asked our port of sailing and said: "What can I send you?" I said: "Nothing—just your good wishes." "No," said he, "I want to send you something to Vancouver." "But," I protested, "You can't send anything there—that's across the lines and everything is held up for duty." "I want you to understand," he answered, "that I can send anything to hell if I want to!" "But please don't send anything there," I remarked, "because we had not planned to call at that port on this trip. We expect to cross the equator, but that's all."

Evidently the retort took his fancy, because he kept the Vancouver people busy the last day we were there. The little Jap boys at the hotel began to lug stuff up to our rooms as soon as we arrived. It grew to be a joke. Every few minutes a tap would come on the door and a Jap, with a broad grin on his face, would say: " 'nother parcel," Finally one little yellow fellow came in, tugging two great baskets—all he could carry. "Beskits—fruit," he said and bowed low. The more they brought the deeper they bowed. They nearly bankrupted me with tips, and our rooms were a sight. In the midst of it all up come fifteen pounds of candies for the girls. "Goodness gracious," I exclaimed, "you will be seasick clear over to Australia, and all on account of the Colonel." I wish I had a picture of the line of bell-boys lugging those parcels out of the hotel on the way to the boat. "Here," said the man at the door, "You can't take all that stuff in the bus." But I had "seen" the head porter, and the door man soon got his instructions to take every thing I wanted. "All right," he said, "but you'll have to wait till another bus comes." The little Japs were still grinning when we drove away.

Our cabins on the ship were worth traveling miles to see. They were decorated like a Polish Church in festival season. The stewardess said in all the flowers she had seen come on board ship she had never witnessed such profusion as this. We were at home immediately, and all because of the loving kindness of the Colonel back in Chicago. And last of all was a bluff telegram from him sending us happily on our way. I do not know what the world would be without friends, but I do know that it is sometimes made a heaven because of them.

We sailed on the good ship "Makura," of the Canadian, Australian Royal Mail Line, and a splendid boat she is, officered by good men and true, and fitted with every comfort. The commander—Captain John Gibb—is one of the truest old salts that sails the main, always pleasant, always genial, perfectly poised and tremendously efficient. You have a sense of security when you are under Captain Gibb that goes far to make ocean travel pleasant. It is also an especial pleasure to mention Mr. H. E. Reed, the chief steward, whose many courtesies I shall never forget. The slavery of editorial work made it necessary for me to do much writing between Vancouver and Honolulu to send back at that port for the Dental Review, and when Mr. Reed learned that I was writing much of the time in my cabin, he immediately had a private room fitted up for me with writing table and all the necessary adjuncts for this kind of work where I would be undisturbed. It is such thoughtfulness and courtesy as this on the part of officials which go so far toward making ocean travel enjoyable. And now for the voyage itself, which must go over till another chapter.

S. S. Makura.

C. N. J.

(To be continued.)

PRACTICAL HINTS.

EDITED BY J. E. SCHAEFFER, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, THE DENTAL REVIEW, 55 State Street, Chicago, Ill.)

The Importance of the Contact Point:—A filling without a well formed contact point with the approximating tooth, or a large flat contact of filling material, filling the entire interproximal space and extending into and crowding upon the gum tissue, is a constant annoyance, and cause patients to avoid future service, fearing it might result in like troubles.—*W. E. Tennant, D. D. S., Fond du Lac.*

What was the Cause?—I have an alluminum plate, worn a year which has several blisters, some of them raised on both sides of the plate.

Blisters in metal plates usually develope upon annealing, having been caused by some defect in the ingot of metal.

Not having to anneal alluminum, as I use only the soft, I am at a loss to account for it.—*L. P. Haskell, Chicago.*

Packing Gum Back:—In order to keep the gum tissue from coming down over the end of the root, which has been prepared for a dowel crown, place warmed temporary stopping over end of root, which has been carefully dried. With a warm instrument, make an opening through the stopping into root canal and force a small piece of orangewood into the canal and force the stopping firmly against the end of the root.—*O. DeForest Davis, D. D. S., Minneapolis, Minn.*

Band Root Abutments:—In regard to bands for the roots, of course such a thing is absolutely essential if you use root abutments for bridges. I regard it as essential in the construction of crowns, for we have observed a number of bad accidents in our own experience from our own cases and in cases of others of fractures of the lateral roots, which have been crowned without using a band. It has come to be our practice to band all lateral roots and band thin bicuspids.—*J. E. Nyman, D. D. S., Chicago.*

Compound Fractures:—A distressing group of cases is furnished by compound fractures in which virulent infections occur. One has here a two-fold problem—the treatment of the infection and the treatment of the fracture. It is usually the best plan to clean up the infection before making any attempt at treating the fracture. The location of the fracture, the type of infection and the form of immobilization, will largely govern the treatment in the individual case. It may be stated in general, that the mouth should be made and kept as clean as possible. Hot, moist dressings will do much to control both the pain and infection. The seat of fracture should be freely irrigated with a warm normal salt solution and continued until all trace of infection has disappeared.—*F. B. Moorehead, M. D., D. D. S., Chicago.*

To Strengthen and Broaden the Soldered Attachments in Assembling Bridges:—In constructing the anchorage crowns see that the occlusal contact is noticeably deficient in that half of the mesio-distal diameter of the crown which presents to the space to be bridged. With these anchorage crowns in position on the articulator place the roll of wax so as to also cover these planes of deficiency and close the articulator and carve all up in one piece. This will restore the occlusion and when the parts are assembled and soldered you not only have the approximal attachments but also one half of the occlusal surface to reinforce it. The likelihood of stress on the dummies tearing the anchorage crowns is obviously lessened. While this method applies more particularly to cast dummies, yet with a little care it can be successfully applied to those that are swaged.—*J. P. Luthringer, D. D. S., Peoria, Ill.*

Teeth and Mouth are Incubators:—These cavities in the teeth are real incubators for all pathogenic bacteria, as it is a recognized fact that in these cavities and in the peri-apical inflammations, germs of diphtheria, pneumonia, tuberculosis, influenza, and other infections have been found. This is what explains the important part played by cavities in the teeth as a door open to the germs, entering the body through the respiratory tract. As the greater number of children's diseases, such as scarlet fever, measles, whooping cough and mumps are believed to be respiratory infections, we are justified in saying that decayed teeth may be equally efficient bearers of other contagious diseases.

The human mouth which may be regarded as an ideal breeder of germ life on account of its temperature, moisture and favorable nutritive conditions, is then a great field for the rapid formation of bacteria.—*Geo. Roussel, D. D. S., Paris.*

Wax Inlay Pattern:—There are two methods of procedure after the cavity is ready. One by making a wax pattern directly in the cavity and the other by taking an impression of the cavity in modeling compound and making a die of amalgam in which the wax pattern for the inlay is made. There are advantages in both methods and sometimes one can be used more successfully than the other. The wax should be of sufficient hardness to break rather than to bend when chilled and yet soft enough to be moldable when warmed. Waxes of different degrees of hardness can be used to advantage in certain cases. In a deep proximo-occlusal cavity in a bicuspid or molar it is difficult to get the wax to place at the first pressure. This being a hard wax a softer wax can be added to the part by drying the surface and flowing it on where needed. The wax of harder consistency will act as a plunger to press the other to place and aid greatly in difficult cases.—*E. D. Coolidge, D. D. S., Chicago.*

The Use of Tin:—The use of tin in no wise suggests the abandonment of gold, porcelain, amalgam or other plastic materials, but no one of these various substances has ever been found to combine all the requirements of a filling adaptable to all cases; their diversity alone sufficiently attests the fact. It will be objected that tin is rarely pure, that it has an unpleasant odor and taste, that its hardness is not sufficiently great for a durable filling, that it discolors the teeth, etc., but in its favor it can be said that its color is less objectionable than that of gold, it is more easily worked, it contracts but slightly in cooling, it tarnishes to no great extent, its ductility permits its more perfect adaptation to the walls of the cavity and its low fusing point, 451 degrees, almost entirely obviates the danger of discoloration or breaking, when used in connection with artificial teeth. Further, pure tin forms no oxid or other combination with substances that can in any way be detrimental to the teeth or general health, a statement that cannot always be made with regard to some of the materials currently employed. My experience leads me to think that it can be advantageously utilized in many cases where one is embarrassed in the choice of a material, more particularly in large proximal or buccal cavities in molars and biscuspids.—*W. F. Kelsey, D. D. S., Marseilles, France.*

Abuses of Medication:—There are on the market today many preparations which are advertised and sold as "cures" for chronic abscess. There is also a rather extensive use of these preparations and of other medicaments. We find frequently in our literature that chronic abscesses may be cured by forcing 95 per cent phenol through the sinus. A good many clinics are given in which this treatment is used. We see and hear similar claims for other preparations, and I think I do not overstate the case in saying that a majority of practitioners are treating all chronic abscesses in about the same manner without differentiating the various conditions that present.

No medication will cause the reattachment of tissues about the end of a root any more than it will in a pus pocket originating in an infection at the gingival line. Recent experiments by many men have shown that not only escharotics but even mild antiseptics do more harm than good in the treatment of wounds. Why then should the members of the dental profession continue to force all kinds and varieties of "dope" through these tracts, when a three minute exploration would tell them absolutely that such treatment could not possibly effect a cure, and also in the face of the demonstrated fact that plain sterile water would be better to use in cases in which the roots were not denuded? If there is much denudation of the root end, medication will do no good; if there is slight or no denudation, medication is unnecessary, other than would ordinarily be used in the treatment of the root canal.—*A. D. Black, M. D., D. D. S., Chicago.*

Vacuum Cleaning vs. Compressed Air:—Some time ago it occurred to me that I was not getting the service out of my compressed air outfit that I should, and that possibly after all I was working along wrong lines; and as there are usually more ways than one of accomplishing the same results, it further occurred to me that probably there were two sides to this question also. Then it came to me, Why not try the vacuum way? Everything is cleaned by the vacuum way nowadays. And, too, patients complained of odor from the compressed air nozzle. This was probably due to foul air in the tank from oils or machinery. If a suction would accomplish the same results, of course this objection would be a thing of the past.

By slightly modifying my tank by putting in a removable cover to facilitate cleaning, and a screen of muslin about three-fourths the way up, when standing the tank on end, to keep anything from entering the vacuum pump, and by changing my outlet and inlet tubes and reversing the pumping arrangement, I accomplished it with little trouble. Also, the opening of the suction nozzle I enlarged somewhat.

As it is now, instead of scattering the chips or foul debris from a nasty, carious tooth all over the patient's mouth, and sometimes into my eyes, it is all done cleanly, and I do not have to squint for fear of having some of the vile chips, reeking with germs, thrown into my eyes. By the old way, some of the chips were blown into recesses and angles all the firmer, especially if the chips were a little wet. In the new way, every particle of loose matter is lifted out and drawn away.—*W. C. Dalbey, A. M., D. D. S., Du Quoin, Ill.*

OBITUARY.

DR. JOSEPH P. ROOT.

Dr. Joseph P. Root, editor of the Western Dental Journal, widely known as a writer upon dental topics, died at Kansas City today from an internal injury received in playing golf. He was 50 years old. Dr. Root was a son of Dr. K. P. Root, minister to Chile under President Grant, member of the first Kansas territorial legislature and former lieutenant-governor of Kansas.—Chicago Daily News, Sept. 4, 1912.

DR. RUFUS CURTIS CHAPMAN.

BORN IN NOBLEBORO, ME., MAY 21, 1822, DIED IN PORTLAND, ME., AUGUST 6, 1912.

Rufus Curtis Chapman was born in Nobleboro, now Damariscotta, May 21, 1822, the son of John and Mary (Bugbee) Chapman. He descended from sturdy New England stock, his ancestors having come from Ipswich, Mass., while this part of the country was still a wilderness. They were among the earliest pioneers of this section, and as late as 1750 owned all of the mainland upon which the village of Damariscotta now stands.

At an early age he took up the study and practice of dentistry in Lynn, Mass., later returning to his native village when there were but three other dentists in the state—one at Augusta, one at Bath and one at Thomaston.

Dr. Chapman was the first man outside of Boston to use ether as an anesthetic in the practice of dentistry, and upon opening his office in Damariscotta in 1846 employed the new pain killer as an aid to his practice.

The reports of his success soon spread and he was called in every direction, even by old physicians, to demonstrate the working of this wonderful new agent and to teach them how to use it.

He received flattering offers to leave Damariscotta but refused them all, preferring to remain here, and here he has lived for sixty-six years actively pursuing his profession, and occupying one office forty-five years.

Upon his retirement one year ago at the age of eighty-nine, he was known to be the oldest practicing dentist in the country if not in the world.

Dr. Chapman took a deep interest in town matters, particularly those relating to education. He was the oldest trustee of Lincoln Academy, serving from 1877 to his death.

He was also chairman of the executive committee from 1880 to the spring of 1912, when declining health caused him to resign.

He was a broad and independent thinker, a constant reader and student on scientific topics and retained his mentality to the last day of his life.

His fine mind and wonderful memory, his keen sense of humor and his staunch loyalty to all that was worthy and true made him a valuable friend and an interesting and lovable companion—a man of dignified and courteous personality whom it was a pleasure to meet and an honor to know.

Mrs. Chapman, who was Mary Matilda Lunt of Bowdoinham, died in 1905.

Two children survive, a son, Mr. J W. Chapman of Newcastle, and a daughter, the wife of Dr. E. F. Stetson of Damariscotta. —Damariscotta Herald.

MEMORANDA

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of $2.00 an inch.]

INSTITUTE OF DENTAL PEDAGOGICS.

The next annual meeting of the Institute of Dental Pedagogics will be held in Pittsburgh, Pa., January 28, 29 and 30, 1913. An unusually interesting program has been arranged and no progressive dental teacher can afford to miss this meeting. Fred W. Gethro, Secretary.

CHAMPAIGN-DANVILLE AND EASTERN ILLINOIS DENTAL SOCIEITES.

There will be a joint meeting of the Champaign-Danville and the Eastern Illinois Dental Societies at Tuscola, Ill., October 15-16. This will be a very interesting meeting, with good papers by well known men and a large attendance is expected.

THE NORTHERN ILLINOIS DENTAL SOCIETY.

The Silver Jubilee of the Northern Illinois Dental Society will be held the fourth Wednesday and Thursday (23-24) of October, 1912, in Rockford. A program of unusual interest has been prepared and a good attendance desired. A banquet will be served at the expense of the members. F. H. Bowers, Secretary.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The semi-annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois, will be held at the Northwestern University Dental School, corner Lake and Dearborn streets, Chicago, beginning Monday, November 11, 1912, at 9 a. m.

All applications, together with the fees, twenty-six dollars ($26.00), must be filed with the secretary at least five (5) days prior to date of examination.

Address all communications to T. A. Broadbent, Secretary, 705 Venetian Building, Chicago, Ill.

CHICAGO DENTAL SOCIETY.

The officers of the Chicago Dental Society are planning a large celebration for Friday and Saturday, January 31, and February 1, 1913. The program includes two days of clinics by selected men from all parts of the country, one evening of papers by men of international reputation, concluding the two days' meeting with a testimonial banquet to our esteemed confrere, Dr. Truman W. Brophy of Chicago. The dentists of Chicago will make every effort to see that the entire program will eclipse all former meetings. Any dentist who has a new or interesting clinic to give at this meeting is cordially invited to correspond with the chairman of the Clinic Committee, Dr. Fred W. Gethro, 917 Marshall Field Bldg., Chicago, Ill.

UNION MEETING

Of the Seventh and Eighth District Dental Societies of New York state will be held at the Hotel Seneca, Rochester, N. Y., on November 14, 15 and 16, 1912. Prominent essayists and able clinicians have been secured to provide those who attend with plenty to think about on very interesting subjects and helpful assistance they can use in their everyday practice. There will also be an extraordinarily large exhibit of the different manufacturers from all over the country, who will bring the latest scientific methods and appliances for demonstration by men who are thoroughly conversant with the needs and requirements of dentists, and every dentist within convenient distance should make it a point to be at this important meeting where there will be so much to learn and see which will be useful in helping him to become a better practitioner. Business Committee, E. G. Link, Chairman.

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REGIONAL OR INFILTRATION ANESTHESIA.*

BY H. G. FISHER, D. D. S., COLOGNE.

The frequent failure of ordinary hypodermic injections to produce anesthesia of the tooth's pulp is due to the fact that the drug used cannot permeate certain thick layers of bone so as to reach the nerve or nerves entering the tooth. This is especially true in the lower jaw and in the region of the bicuspids and molars in the upper jaw. By the use of infiltration anesthesia of certain regions, uniform results can be attained, provided a definite and careful technique is pursued. In presenting this subject I am indebted to the writings of Guido Fischer, Braun, Bunte and Moral, to the two latter men especially so, and from them I have copied some of my pictures.

By common consent Novocain has been chosen as the medium, it being one-tenth as toxic as cocain, and non-irritating, and when combined with synthetic suprarenin, an ideal preparation is attained. Novocain is a synthetic preparation appearing as a white crystaline powder, freely soluble in water and easily rendered sterile by boiling without affecting its composition. The preparation I use is prepared by the Höechst Farbwerke of Meister Lucius and Bruning called Novocain Suprarenin Tablets *E* containing Novocain 0.02 gram, Suprarenin 0.00005 gram. Each tablet is dissolved just before using in a physiological salt solution of 0.9 per cent, making an isotonic solution, one that has the same osmotic properties as the fluids of the body, thereby avoiding the after pains so common when distilled water is used. In preparing the injecting solution pursue the following: Have made at the chemist a 0.9 per cent physiological salt solution to the liter of which is added 3 drops of official dilute hydrochloric acid, this of course is made sterile and sealed in sterile bottles of about 10 grams each; just before using take one cubic centimeter, for a two per cent solution, and 2 cubic centimeters for a one per cent solution; boil for a minute over spirit lamp, add one Tablet E, boil another minute, then draw into syringe and allow to come to body temperature before using. A suitable syringe is a very important accessory, one that can be easily rendered sterile, without injuring. I have found the one made by Guido Fischer a very suitable one. It is not necessary to boil this instrument after each injection, if, before using, it is drawn full of alcohol and expelled thoroughly. This instrument has a ground glass barrel with a steel piston, strong finger and palm grasps, so that great pressure can be used if necessary. A fresh needle of the improved leaded head type can be used for each injection. Extreme care must be taken in thoroughly cleaning and disinfecting the field where the needle punctures the mucous membrane; this can be done by washing the part with tincture iodine, thereby avoiding carrying infectious matter into the tissue. For success with infiltration anesthesia a thorough knowledge of the anatomy of the face is necessary, as the points where the solution must be deposited are along the course of

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*Read before the American Dental Society of Europe, April, 1912.

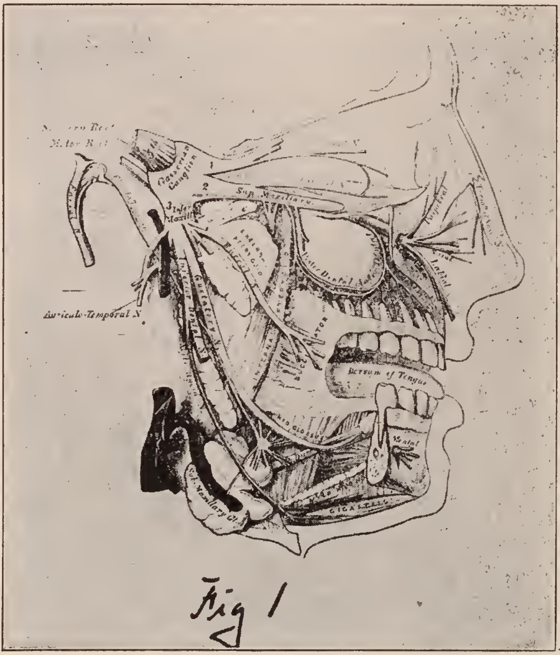


Fig 1

the second and third branches of the fifth nerve, especially in the regions of the exits and entrances from the body of the bone, as the foramina and various small openings in the maxillary bones. In the upper jaw the points are the posterior dental canals on the maxillary tuberosity, the infraorbital foramen, the posterior palatine foramen and foramen incisum. On the lower jaw the inferior dental foramen, mental foramen and various small openings in the region of the symphisis. The posterior dental and anterior dental branches of the superior maxillary nerve, the anterior palatine, and naso-palatine branches of Meckel's ganglion supply the upper teeth and alveolar process. The inferior dental branch of inferior maxillary nerve supplies the lower teeth and surrounding tissue. Fig. 1. The posterior dental branch of the superior maxillary nerve arises from the trunk just as it is about to enter the infraorbital canal and immediately passes downward on the tuberosity of the superior maxillary bone, enters a canal in the substance of the bone, passes from behind forward and joins opposite the canine fossa with the anterior dental, numerous filaments are given off from the lower border which supply the molar teeth and gums. The anterior branch is given off from the trunk just before its exit from the infraorbital foramen and enters a special canal in the anterior wall of the antrum and com-

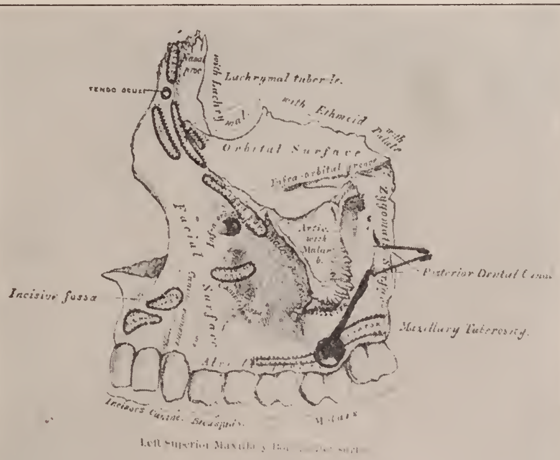


Fig 2

municates with the posterior dental, filaments are given off which supply the bicuspid teeth as well as the cuspid and incisors on that side. The anterior palatine nerve descends through the posterior palatine canal, Fig. 3. To the palate, Fig. 4, it passes forward through a groove in the hard palate as far as the incisor teeth; it supplies the gums and mucous membrane and glands of the hard palate; it communicates in front with the naso-palatine nerve. The naso-palatine nerve, Fig. 4, enters the nasal fossa and passes inward across the roof of the nose to reach the septum; it then runs along the lower part of the septum to the anterior palatine foramen through the anterior palatine canal; here it supplies the mucous membrane of the mouth behind the incisor teeth and communicates with the anterior palatine nerve. It is interesting to note that through the anastomosis of one nerve with another the anesthetic is carried into the region beyond. In order to anesthetize the three upper molars on one side at once, it is necessary to inject buccally, in the region of the posterior dental canals, Fig. 2, on the maxillary tuberosity, and lingually in the region of the posterior palatine canal. The posterior dental canals, Fig. 2, lie on the maxillary tuberosity 1 to 1½ centimeters above the border of the alveolar process or just over the apex of the third molar root, if it is present, and about one half centimeter in front of the maxillary tuberosity if absent. With

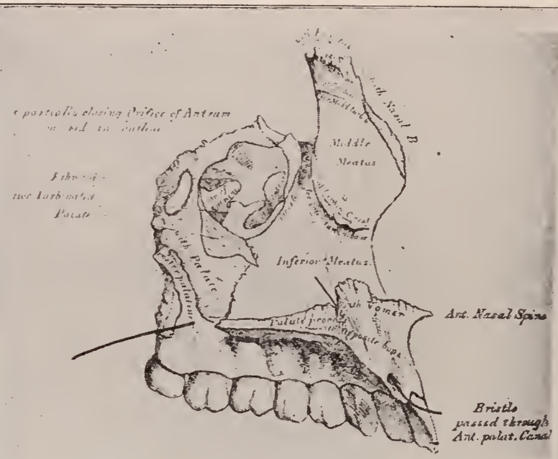


Fig 3

a straight needle 26 millimeters long puncture the gum tissue about ¾ to 1 centimeter above the free margin, opposite the disto-buccal root of the second molar and push the needle upward and backward, Fig. 2, to the region above the apex of the third molar root. When the needle disappears deposit one cubic centimeter of the solution, always being careful to inject while pushing the needle forward or withdrawing in order to avoid injecting into the veins. To complete the infiltration anesthesia a depot must be made lingually, and this, in the region of the posterior palatine canal, Fig. 3. This lies between the second and third molar or ½ centimeter in front of the maxillary tuberosity and 1½ centimeters above the edge of the alveolar process. On close observation one can discover a slight groove in the mucous membrane between the roots of the second and third molar. Puncture high up on the palate the mucous membrane with a needle 26 millimeters long at the beginning of this groove and pushing it backward and upward until the point of the needle reaches the region above mentioned, and there deposit ⅛ to ¼ c.c. of the solution. On the palate side it is better not to inject very much of the solution as the rapid diffusion interferes with deglutition. After eight

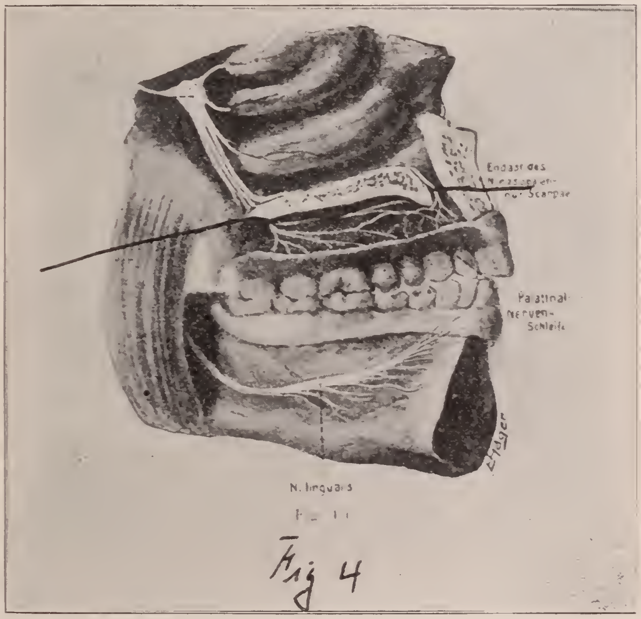


Fig 4

to fifteen minutes complete anesthesia of the three molars on that side will have taken place. In anesthetizing the cuspid and incisor teeth it becomes necessary to deposit your solution as near the infraorbital foramen as possible, some authorities claim the exact location must be reached but I hesitate in doing so, as it lies just under the lower border of the orbit, Fig. 1. In order to make no mistake it becomes necessary to know the exact location of this foramen; it lies about seven millimeters below the lower border of the orbit and one and a half centimeters from the inner angle of the eye and about 34 millimeters from the middle of the outer alveolar border of the cuspid tooth. These distances vary, of course; in children they are less and in some adults greater. With the first finger of the left hand palpate the lower border of the orbit, seven millimeters below this and 1½ centimeters from the inner angle of the eye fix the index finger, with the thumb of the same hand raise the upper lip with the jaws almost closed. Knowing the distance between the infraorbital foramen and the alveolar border of the cuspid 34 millimeters puncture the mucous membrane just distal to the cuspid root and near its apex with a straight needle 26 millimeters long; when the point of the needle reaches the region just below where the index finger is fixed, inject one c.c of the solution. On the lingual side it becomes necessary to reach the foramen incisum, in order to complete the anesthesia of this region. It lies, Fig. 3, immediately behind and

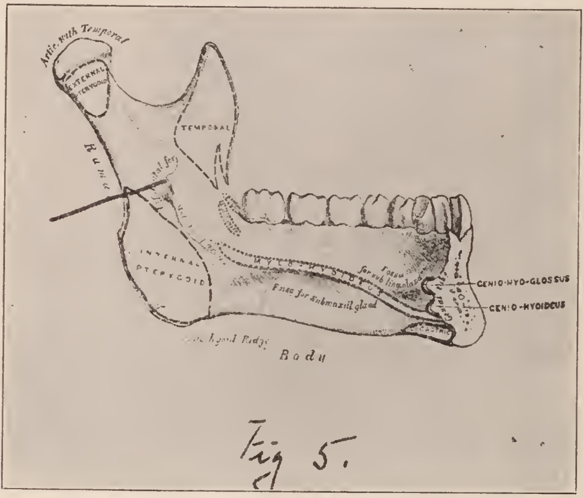
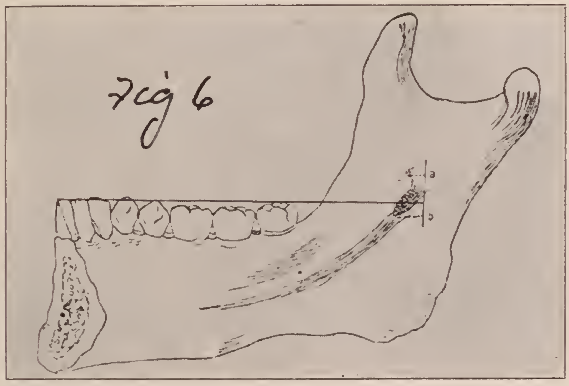


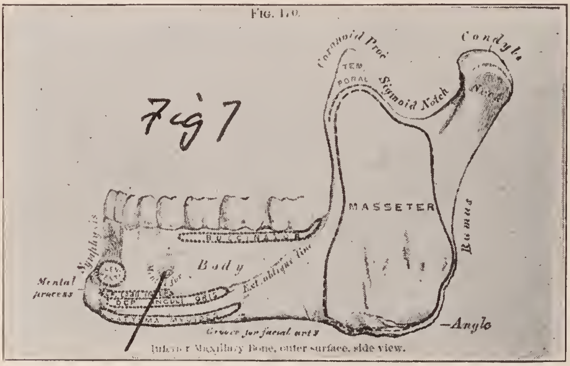
Fig 5.

above the median line, about 16 millimeters from the point of contact of the two central incisors, or eight millimeters above the alveolar border. Another way to locate it is to draw a line from the distal of one cuspid to the other; the exact middle of this line will find the foramen incisum; this again varies in children, the distances being less. With a straight short needle puncture the mucous membrane in the medium line or incisal papilla and just after the point of the needle disappears inject a drop or so under pressure, then advance slowly in an upward direction until about ½ centimeter of needle disappears when again inject ¼ c.c. of the solution. In case one or two incisors or possibly the cuspid wants anesthetizing it is advisable to inject parallel to the tooth root as the tissue in the foramen is very sensitive. After eight to ten minutes full anesthesia of that region will have taken place. For upper bicuspids alone, Fig. 2, puncture the mucous membrane just distal to the apex of the cuspid root and push the needle in a horizontal direction backward over the apices of the bicuspid roots where one c.c. of solution is deposited. Lingually either the anterior palatine nerve at its exit from the posterior palatine canal, Fig. 3, or between the two roots and parallel to them about ¼ c.c.



Infiltration anesthesia of the lower jaw is perhaps the only way to obtain satisfactory results, as the outer layer of this bone is very dense and no small openings appear in its structure, with the possible exception of the symphysis, where rapid diffusion of drug can take place, therefore it becomes necessary to reach the nerves at their entrances and exits from the canals in the bone. For the molars the inferior dental nerve at its entrance into the bone, the inferior dental foramen, Fig. 5, situated on the inner side of the ramus of the jaw. For the bicuspids the mental foramen, Fig. 7, situated on the outer side of the body of the jaw opposite the apex of the second bicuspid root, and for the cuspid and incisors what corresponds to the canine fossa in the upper jaw. The inferior dental nerve, Fig. 1, is a branch of the inferior maxillary, and passes downward from the latter, between the muscles and ligaments on the inner side of the ramus of the jaw, where it enters the bone at the inferior dental foramen, Fig. 6. Here it becomes necessary to deposit the solution for the molar teeth. To locate this foramen the following technique is necessary: About ½ centimeter behind the third molar at the junction of the body with the ramus, is found a triangular concavity formed by the junction of the external and internal oblique line. With the index finger palpatate this concavity, holding the finger nail on a plane with the inner border of the internal oblique line on about a level with the occlusal surface of the molar teeth. With a straight needle 26 millimeters long puncture the mucous membrane along the inner side of the finger nail about ½ centimeter above occlusal surface of the third molar, and just as the needle disappears deposit one drop of the solution. Care must be exercised not to inject more, as the lingual or gustatory nerve lies just in front and inner side of the inferior dental and should be avoided. With the open side of the needle next to and close to the bone push the same forward and downward about 1½ centimeters directing the syringe from the opposite angle of the mouth, where the inferior dental foramen is located, there deposit 1 c.c. of the solution. On the buccal side inject deep into the periosteum opposite

FIG. 1.0.



Inferior Maxillary Bone, outer surface, side view.

the last molar teeth; after 10 to 15 minutes complete anesthesia will have taken place here. The location of the inferior dental foramen varies in children and old age; in the former it lies higher than above described, while in old age lower. For the bicuspids it is necessary to inject around the mental foramen, Fig. 7, which is located at the apex of the second bicuspid tooth or about fourteen millimeters below the edge of the alveolar process and about the same distance above the lower border of the jaw, with the opening pointing distally.

Fig. 7. Buccally puncture the mucous membrane just distal to the second bicuspid tooth a trifle below the free margin of the gum, using a bayonet attachment to the syringe. With the open side of the needle to the bone, push the same downward to about midway between the upper and lower border of the jaw, there deposit 1 c.c. of the solution. Lingually deposit ½ c.c. of the solution between the roots of the bicuspids and parallel to them, after 5 to 10 minutes full anesthesia will have taken place. For the cuspid and incisors the following technique is necessary: Below the cuspid root on the labial, between it and the symphysis are found numerous small openings in the bone. On the lingual surface in the median line well down to the lower border of the bone one is found while opposite the distal of the cuspid roots, well down toward the lower border is found another foramen. On the labial puncture the mucous membrane about 1½ c.c. below the free margin of the gum or when the fold of the lip begins, just mesial to the cuspid root, and push the needle downward and slightly forward 1 c.c., keeping the needle at the start away from the bone, so as to avoid the concavity in this region, when the point of the needle disappears 1 c.c. approach the bone, there deposit 1 c.c. of the solution, on the lingual surface puncture the mucous membrane parallel to the tooth to be anesthetized, pushing the needle downward its full length 26 mm. and deposit ¼ c.c.

THE ULTRAMICROSCOPE.*

BY C. F. BÖDECKER, JR., D.D.S., BERLIN.

Specimens examined under the ordinary microscope appear as darker structures in a bright field. Under the ultramicroscope, however, the conditions are reversed, the specimen being bright, while the field is perfectly dark. The firmament at night gives a good idea of what the dark field illumination shows. If the planets, instead of being points of light upon a dark background, were dark dots in a bright sky, we certainly would be unable to see them.

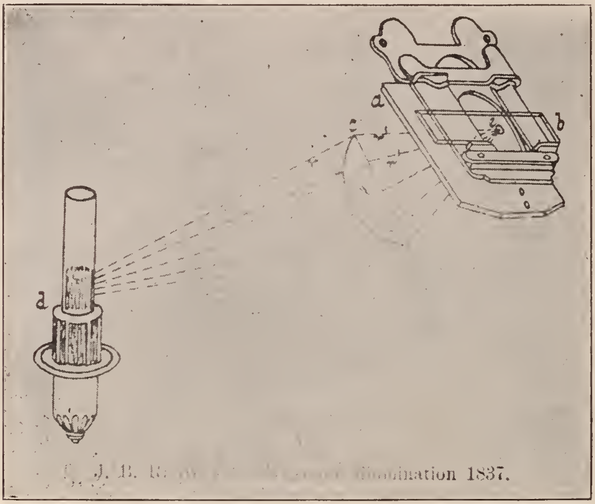


Fig. 1.

In general, but very vague ideas exist in regard to the ultramicroscope. It is not, as is often believed a new optical instrument, but is the ordinary microscope in which the system of illumination is altered by the attachment of a specially constructed apparatus, called the dark field condenser. As contrast is the most important factor in this system of illumination, the condenser giving the darkest field is the one which will show the minutest objects. There are a number of such condensors giving a more or less satisfactory illumination, but only to those showing objects which are 0.0002 of a millimeter in diameter, should the name of ultramicroscope be applied. Another factor which led to confusion was, that about the same time that the ultramicroscope was revived, the apparatus for microphotography with ultra-violet light was invented. In this case it was simply a confusion of similarly sounding names. When the dark field illumination was perfected to its present degree, it was generally believed that by this means the microscopic lens would acquire an increased power of definition. The ultra-violet apparatus does increase the power of definition of the lens, owing to the use of a purely monochromatic light, while the ultramicroscope, using the same source of illumination as the ordinary microscope, cannot increase the power of definition of the lenses. The ultramicroscope only increases the visibility of the tiniest particles by reflected illumination.

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*Being the report of the Microscopist, read before the American Dental Society of Europe, at Brussels, April, 1912.

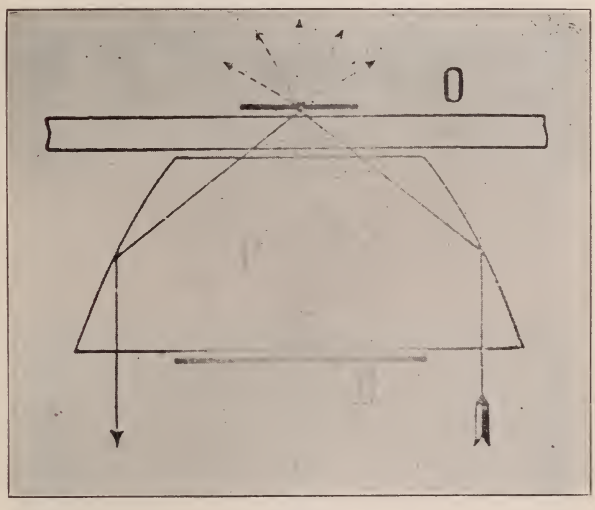

Fig. 2.

The theory upon which this apparatus is based will be most readily understood by recalling the fact that the finest particles of dust can be observed in the air whenever a ray or sunlight penetrates a darkened room. Not the power of the eye is increasd, only the method of illumination is changed. The background being dark, every object within the path of the light becomes more visible by contrast. In the same manner the ultramicroscope increases the visibility of the smallest particles of matter.

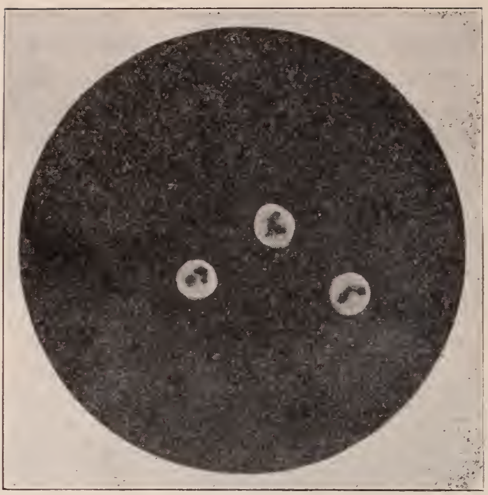

Fig. 3.

As a method of examining specimens microscopically, the dark-field illumination is by no means new, for as early as 1837, J. B. Reade, an Englishman, constructed what he termed a "black-ground illumination" (Fig. 1). Ross and Nobert, both in 1855, Wenham in

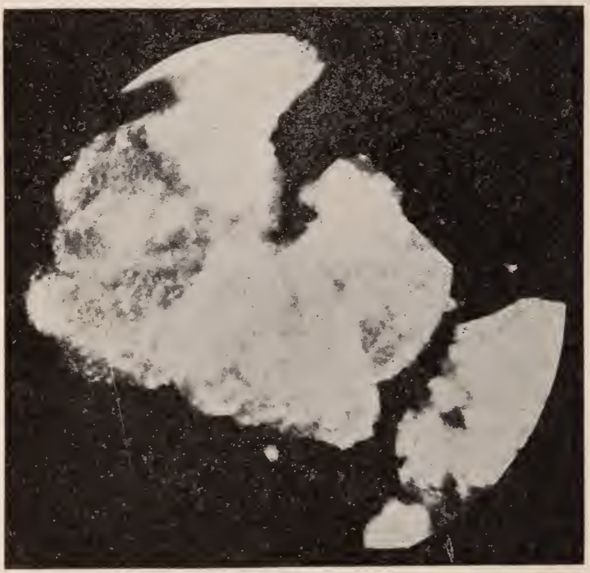

Fig. 4.

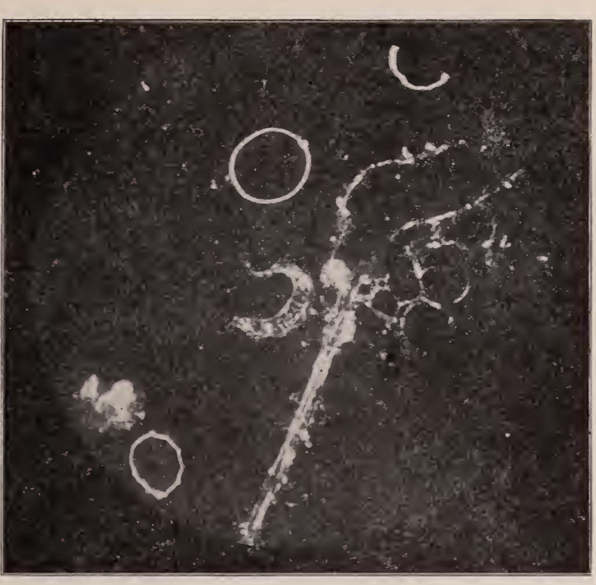

Fig. 5.

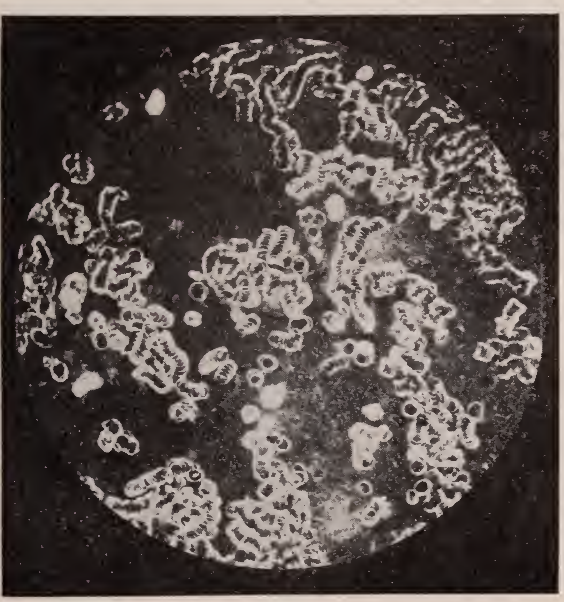

Fig. 6.

1856, and later many others constructed contrivances for the same purpose. In recent years Cotton, Mouton, Scarpa, Reichard and others improved the apparati for dark-field illumination.

Siedentopf of the firm of Zeiss constructed what he calls the paraboloid condensor, which gives an excellent dark field illumination (Fig. 2). In this figure, taken from the "Zeitschrift für wissenchaftliche Mikroscopie," the letter "P" shows the paraboloid condensor in the form of a truncated cone; "O" is the stage of the microscope with the specimen and coverglass; while "B" is a circular stop cutting off all central illumination. The light can therefore only enter at the edge of the paraboloid condensor, as shown in the diagram. Passing upwards, it strikes the silvered walls of the condensor, is reflected to the under surface of the coverglass, and then downward along the course of the single arrow. In this way, no direct light passes into the lenses, whereas the specimen, lying under the coverglass is illuminated from all sides, the rays reflected from its surface, passing through the lens to the eye of the microscopist. The specimen is then seen as a strongly luminous body on a dark background.

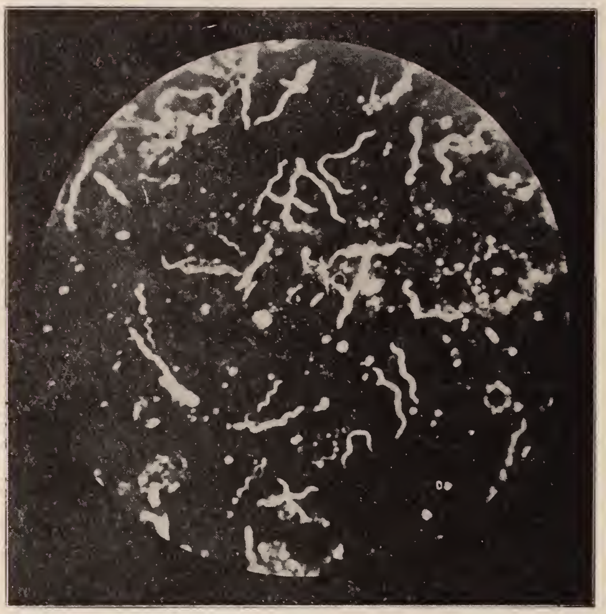

Fig. 7.

Recently a method has been invented by Curt Proskauer, (Breslau), in which the dark field instead of being optically produced is obtained by staining. A coverglass upon which the microorganisms have been fixed, is thinly coated with a solution of india ink. All light, except that passing through the specimen is thereby cut off and the organisms appear as bright bodies upon a dark background. Fig. 3 shows leucocytes prepared in this manner. The advantage of this method is that any ordinary microscope can be used to show the peculiarities of the dark field illumination. Anyone wishing to try this can find an exact description in the *Deutsche Monatsschrift* of April, 1911.

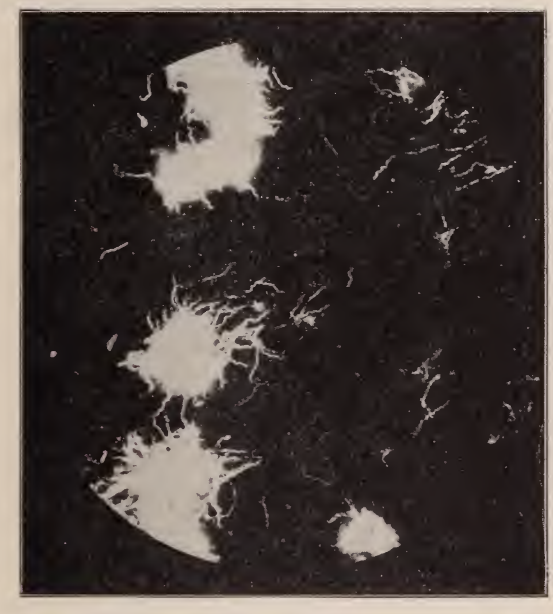

Fig. 8.

The ultramicroscope is used in studying and identifying bacteria, blood, and in fact any small isolated bodies. The specimens need not first be stained, as they are perfectly visible in the unstained state. This is of great value in examining bacteria, etc. in the live state, as the process of fixing and staining, undoubtedly causes some changes in their structure. In practice, the ultramicroscope offers a rapid means of identifying various forms of microorganisms as an aid to diagnosis.

In histological research the ultramicroscope or dark field illumination can never replace illumination by transmitted light. In the ordinary microscope the light passes through the specimen before reaching the eye of the observer, while in dark field illumination, the light is reflected only from the surface. The latter can therefore not show the internal structure of an organism, but it can most clearly define the outline form. The ultramicroscope, while offering no special advantages to the histologist, is of value in determining the outline form of microorganisms, protozoae, sponge spicules, etc. Fig. 4 shows some cells of pavements epithelium as seen through an ultramicroscope. No structures can be distinguished in the cell contents, the outline form however is clearly defined. Whenever the organism under examination is of sufficient size and transparency, an apparent structure within the cell may be observed. This is due, in part, to reflection of light from inequalities of the lower as well as the upper surface of the organism. In some cases, cell structure of a coarser nature may be recognized, if their presence has previously been determined by some other method of examination. In figure 5, the internal structure of a Trypansoma, a blood parasite, can distinctly be seen. The human blood, in figure 6, was, photographed shortly after having been drawn. The red blood cells have formed the characteristic rouleaux while the presence of fibrinous threads denotes the beginning of the process of coagulation.

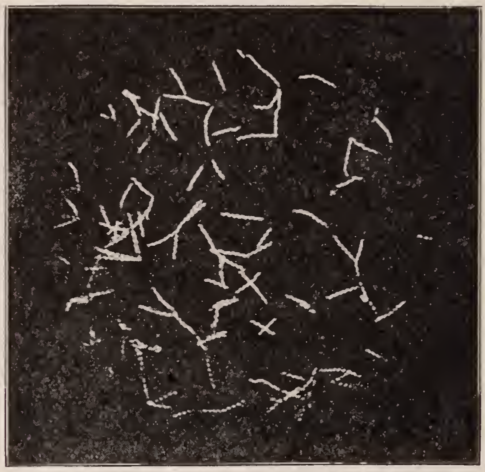

Fig. 9.

In the next figures some microorganisms are shown. The spirochaeti have been chosen as they possess a very characteristic outline form. Fig. 7 is a specimen taken from the mouth and shows several forms of spirochaeti. Fig. 8 are spirochaeti of special interest, being the so-called germs of syphilis, the spirochaeti pallida.

In conclusion, I wish to call attention to the fact that the appearance of structures under the microscope may be considerably altered by faulty illumination. The result of such illumination can most readily be studied with the ultramicroscope. In the center of the field, Fig. 9 shows the spirochaeti as they really are. At one edge, however, they appear beaded, almost as if they contained spores, or, were chains of streptococci. In this figure, this appearance is the result of accidentally faulty illumination. In Fig. 10, the distortion is intentional, to demonstrate to what extent the appearance of specimens may be altered. The first field shows sponge needles as they normally appear. In No. 2 and No. 3, the axis of illumination has been displaced laterally. The last field shows the result of displacing the focus of the condensor. Had the specimen been a section of tissue instead of long straight isolated spicules, the distortion, though present, would have been much more difficult to observe. As tissues which refract light are much more liable to produce deceptive images,

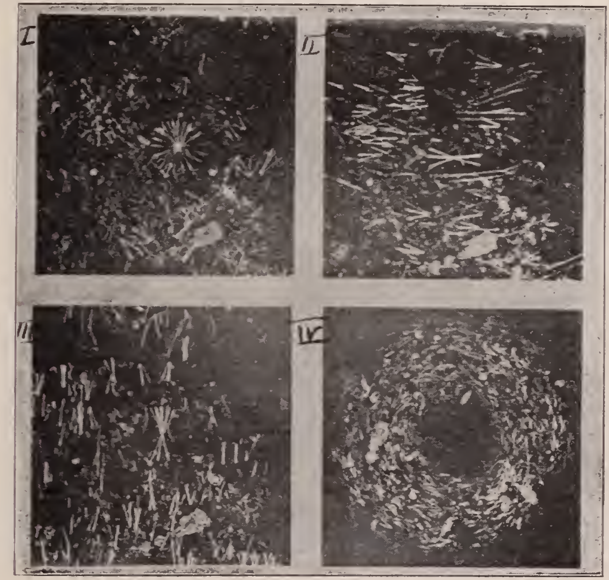

Fig. 10.

than soft tissues, the sponge needles were selected for the above illustration. What is true of sponge spicules in this respect, is equally true of the human enamel, though in this tissue, distortion is more difficult to detect, as, not isolated prisms, but only compact masses of enamel can be studied. While the ultramicroscope is of no direct use to the dental histologist, it has at least proven that by studying only ground sections of enamel, the minute structure of this tissue can never, with certainty be determined.

THE DANGER OF ARSENICAL NECROSIS AVOIDED BY A RADIOGRAPH.*

BY C. F. BÖDECKER, JR., D.D.S., BERLIN.

The danger of arsenical poisoning is not as great now, as when a paste of arsenious acid was used to devitalize a pulp. The arsenical fibre, which the most of us use for that purpose does not seem as poisonous as the above-mentioned paste. Nevertheless, we would not be edified to ascertain that a part of the treatment, placed upon the exposed pulp had found its way to the bone.

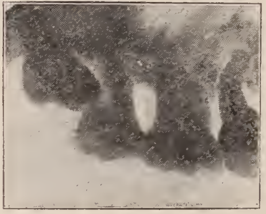

Fig. 1.

The radiograph, which I wish to show you (Fig. 1), was the means of preventing, to my mind, a serious arsenical necrosis.

A patient, 36 years of age, complained of slight pain on the upper leftside. An examination showed the mesioproximal surface of the upper second molar decayed, involving the pulp. As there was not the slightest hope of preserving the pulp, I prepared to place the devitalizing agent, when the patient told me that she would not be able to return for the next treatment for two weeks. Cocain and oxysulphate cement were placed in the cavity to prevent recurring pain. At the same time a radiograph was taken in order to ascertain the length and number of root canals. On examining this photograph, it was found that an impacted upper third molar had resorbed considerable portions of the distal surface of the roots of the second molar, so much in fact, that the pulp was exposed. If arsenious acid had been applied to the pulp of the second molar, it would have penetrated the pulp tissue and passed into the bone above.

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*Read before the American Dental Society of Europe, April, 1912.

We all know the extremely caustic action of arsenious acid upon bone and can therefore appreciate my satisfaction that I had not applied this medicament to extirpate the pulp.

As the radiograph shows that the distal surface of the second molar had been extensively resorbed, so much so, that the distobuccal root had completely disappeared, it was impossible to preserve this tooth for any length of time. After extraction, it was found that the pressure exerted by the third molar, had caused the pulp of the second molar to hypertrophy to a considerable extent so that it protruded into the bone distally. The specimen will be handed around and you can see the pulp projecting from the pulp chamber. If arsenious acid had been applied, the hypertrophied pulp would have acted as carrier and conducted the devitalizing agent to the bone.

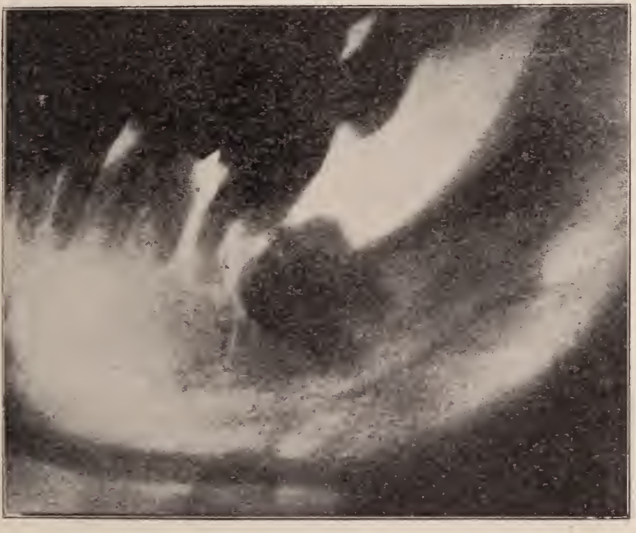

Fig. 2.

Chronic inflammations in the bone may be present causing almost no pain. This is proven by the present case, as the patient was hardly aware of any abnormality on that side of the maxilla. It is marvelous to think that such changes can take place accompanied by so little sensation and that, on the other hand, minute pulp stones will often cause a severe pulpitis.

The presence of impacted third molars, causing a resorption of the second molars is not by any means as rare as it would seem. Fig. 2 shows an unerupted lower third molar lying obliquely in the bone, causing the resorption of the distal root of the second molar, whose pulp was alive and it was remarkable to note how little pain was felt by the patient. The latter is 30 years of age and only once was his attention called to the fact that all was not in a normal condition on this side. He experienced one acute inflammation with considerable swelling which subsided in a week, leaving no ill after effects or pericementitis. A year before the lower second molar of the other side was extracted, and the same conditions as shown in this radiograph were found. It has been my experience that if one molar on one side is impacted, the others are rarely in their normal position.

In conclusion, I wish to say that it is my belief that resorptions caused by impacted upper or lower third molars are not uncommon. We rarely heard of them before the advent of the Röntgen apparatus because they were not correctly diagnosed. The pain being usually slight, caused the patient little or no inconvenience, and if subsequently an acute inflammation followed, an abscess of the second molar was usually considered to be the cause. After the removal of the second molar, all symptoms ceased and the patient and operator remained unconscious of the existence of the third molar, the cause of the inflammation.

The object of this paper is to call attention to the fact that in applying arsenious acid to a second molar, the possibility of the presence of an impacted third molar should be considered.

THE EVOLUTION OF DENTISTRY.*

BY EDWARD H. BAKER, A.B., MD., CHICAGO.

In the course of organic evolution which has occurred during the life period of 100,000,000 years (1) on this earth, we note one significant fact.

As any environment changed its characteristics, those of its inhabitants who could adapt themselves to the new conditions lived. Those races which did not change so as to meet the exigencies of the new life, were wiped out.

Suppose, for instance, an inaccessible island, with low, swampy land, inhabited only by such plants and animals as were adapted to life in swamps.

Now if the island is gradually elevated so that the land becomes dry, and finally, in the course of many ages, becomes mountainous in character, it is evident that the only races of plants and animals which will be alive on this island, will be those which have so modified their original physical characteristics as to be able to live and thrive in the mountains.

Now evolution is true, not only as regards plants and animals, but as regards society, and as regards business methods and institutions.

The great army of the unemployed, today consists largely of men who have been thrown out of employment by the invention of new machinery or by the introduction of new methods of manufacture or organization.

The people who are employed, are those who fit the needs of the hour. The unfit are relegated to the junk-pile,

THE WANING OF THE DENTAL PROFESSION.

Before going on, I wish to make the statement that I am a friend of dentistry, because I believe the mouth fulfills an office of unique and paramount importance in the human body. I believe that anything which casts public discredit upon the dental profession would be a calamity, not only to dentists as individuals, but to the whole human race as well. Hence, I hope that my words will be taken as those of a friendly and not too officious adviser, rather than of a busybody or trouble-maker. And it is only because these utterances will be heard or read almost exclusively by members of the dental profession, that I have ventured to express myself as freely as I have.

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*Read before Illinois State Dental Society, May 15, 1912.

1. "Oral Conditions as affected by Modern Civilization," by E. H. Baker, DENTAL REVIEW, vol. 26, No. 1, Jan., 1912, P. 8.

We may safely conclude that the dental profession will prove no exception to the great forces of evolutionary development. If the environment changes, and the dental profession does not change in a way to meet the new conditions successfully, dentists, as we know them today, will undoubtedly disappear, and be replaced by some other profession or trade which is more adapted to the new conditions.

The awakening of the general public to the evils of a dentistry has already begun. I wish I could say "the awakening of the public to the evils of bad dentistry," but the first gun to be fired, did not make any such distinction. While Dr. Hunter may have intended in his original article, to make such a distinction, the distinction is not clear enough to be very significant to the eyes of those outside the dental profession. And the popular article which appeared in *Current Literature* for August, 1911, certainly made no distinction at all between good and bad American dentists.

While Dr. Hunter's scientific work might be of great value to the dental profession, the apathy of the dentists themselves to the conditions which are silently growing up around them, have made Dr. Hunter a most dangerous enemy at the present time. For, with the exception of the two words "American Dentistry," what Dr. Hunter says is undoubtedly true. And it is in the power of this truth that the danger lies.

You will perhaps understand the situation more clearly when I say that Dr. Wm. Hunter of London, England, is a man of high standing in the medical profession, both in his own country and all over the world. He gave an address on "The Role of Sepsis and of Antisepsis in Medicine" before the Faculty of Medicine of McGill University, Montreal, Canada, at the opening of the session, Oct. 3, 1910, which was published in the *London Lancet,* Jan. 14, 1911. It was this address which was reviewed in *Current Literature.*

This subject is not, however, a new one to Dr. Hunter. He has been writing on it for twelve years past. And his work is good work. He has traced the results of oral sepsis in various bodily diseases.

Sepsis, as you know, is poisoning by the products of a putrefactive process.

His papers on Anemia, including the most severe Pernicious Anemia, as caused by oral sepsis, began to appear in 1900.

He has written a very good book on the subject, which can be found in the Crerar Library of Chicago. Knowledge of his work, and its importance, is spreading among the more intelligent members of the medical profession; and they, in turn, are making observations and investigations of their own.

It is certain that in the quiet, insidious growth among the medical profession of this knowledge of facts regarding the results of bad dentistry, lies a great menace. Hunter has not written his last article. He is not going to keep still. This article is not a sudden flash in the pan. It is the flash of lightning that reveals for a moment the size of the enemy's forces. And other good authorities will soon arise, to bear witness of the evils of bad dentistry. Their statements will be taken up by those "yellow" writers who are looking for sensational opportunities. By this means, more damage can be caused by newspaper and magazine articles in one year, than can be overcome by the dental profession in twenty-five years of hard work.

To give you a more vivid picture of the danger of the situation, let me read you the article in *Current Literature* for August, 1911.

"SCIENCE AND DISCOVERY."

"An English Physician's Denunciation of American Dentistry."

The world has been woefully misled for many years regarding American dentistry, in the opinion of the illustrious pathologist to the London Charing Cross Hospital, Dr. William Hunter. It is his matured conviction that dentistry as practiced in this country is a curse to the world, the fruitful source of one of the most terrible scourges afflicting the physical frame of man—sepsis. In other words, dentistry, as practiced by even the ablest men in the American profession, is spreading deadly maladies not only among the moderately well off, but among the very rich. Indeed the rich are the worst sufferers because they can afford the high price of the most skilled work.

An illustration of Dr. Hunter's meaning is given by himself in the *London Lancet*. One of the worst cases of sepsis he ever saw was brought him by a doctor who said that the patient's mouth had been "carefully seen to and was in good order." The patient was a tall, handsome man in the prime of life. His case was the severest pernicious idiopathic anemia imaginable. His mouth was to all appearance clean, for it was one solid mass of gold caps, bridges, crowns, fillings, false teeth and the like, so ingeniously built up that one could hardly tell what was false and what was real. To free that man from his poisoned state involved what was really equivalent to a major operation in surgery. The condition of necrosis, sepsis and the like revealed on removal of the golden architecture of his mouth was perfectly appalling. Doctor Hunter proceeds:

"No one has probably had more reason than I have had to admire the sheer ingenuity and mechanical skill constantly displayed by the dental surgeon. And no one has had more reason to appreciate the ghastly tragedies or oral sepsis which his misplaced ingenuity so often carries in its train. Gold fillings, gold caps, gold bridges, gold crowns, fixed dentures, built in, on, and around diseased teeth, form a veritable mausoleum of gold over a mass of sepsis to which there is no parallel in the whole realm of medicine or surgery. The whole constitutes a perfect gold trap of sepsis of which the patient is proud and which no persuasion will induce him to part with. For has it not cost him much money, and has he not been proud to have his black roots covered with beaten gold, although no ingenuity in the world can incorporate the gold edge of the cap or crown with the underlying surfaces of the root beneath the edges of the gums? There is no rank of society free from the fatal effects on health of this surgical malpractice.

"I speak from experience. The worst cases of anemia, gastritis, colitis of all kinds and degrees, of obscure fever of unknown origin, or purpura, or nervous disturbances of all kinds ranging from mental depression up to actual lesions of the cord, of chronic rehumatic affections, of kidney disease, are those which owe their origin to, or are gravely complicated by, the oral sepsis produced in private patients by these gold traps of sepsis. Time and again I have traced the very onset of the whole trouble of which they complained to a period within a month, or two of their insertion. The sepsis hereby produced is particularly severe and hurtful in its effects. For it is dammed up in the bone and in the periosteum and can not be got rid of by any antiseptic measures which the patient or the doctor can carry out. Moreover, it is painless, and its septic effects therefore go on steadily accumulating in intensity without drawing attention to their seat of origin.

"Such are the fruits of this baneful so-called 'Conservative dentistry,' the title would be a fitting one if the teeth were a series of ivory pegs planted in stone sockets. But the teeth being what they are—namely, highly developed pieces of bone tissue, possessing, I would point out, a richer blood and nerve supply than any piece of tissue of the same size in the whole body—and planted in sockets of bone with the closest vascular relations to the bone and the soft tissues of the periosteum. and the gums, the title that would best describe the dentistry here referred to would be that of "septic dentistry." Conservative it is, but only in one sense. It conserves the sepsis which it produces by the gold work it places over and around the teeth, by the satisfaction which it gives the patient, by the pride which the dentist responsible for it feels in his 'high-class American' work, and by his inability or unwillingness to recognize the septic effects which it produces.

"After ten years' experience of the nature of these dental effects and of the difficulty in removing them from the mouth of the unfortunate wealthy people best able to afford them, Doctor Hunter feels that the only solution of the difficulty is a spread among dentists of a knowledge of sepsis. The problem is a pressing one for the dental profession, its solution being in the interests of public health. The civilized world beholds one branch of the healing profession struggling with might and main to prevent a poisonous condition of the human system, known as sepsis. There is in the world another great department of the therapeutic world, that of dentistry, industriously engaged in promoting the evil of sepsis. Dentistry, that is to say, ignores the fundamental truths of anatomy, physiology, pathology and the tissues generally. 'To goldcap a healthy or diseased tooth in order to beautify or preserve it is the negation of every one of these truths (of physiology)—a veritable apotheosis of septic surgery and of surgical and medical malpractice. It is a horror of the age.'

"The medical ill effects of this septic surgery are to be seen every day in those who are the victims of this gilded dentistry—in their dirty-gray, sallow, pale, wax-like complexions, and in the chronic dyspepsias, intestinal disorders, ill-health, anemias, and nervous (neurotic) complaints from which they suffer. In no class of patients and in no country are these, in my observations, more common than among Americans and in America, the original home of this class of work.

"The chief feature of this particular oral sepsis is that the whole of it is swallowed or absorbed into the lymphatics and blood. Unlike the sepsis of open wounds on the outside of the body, none of it is got rid of by free discharge on the surface. The effects of it, therefore, fall in the first place upon the whole of the alimentary tract from the tonsils downward. These effects include every degree and variety of tonsillitis and pharyngitis; of gastric trouble from functional dyspepsia up to gastritis and gastric ulcer; and every degree and variety of enteritis and colitis, and troubles in adjacent parts—e. g., appendicitis. The effects fall in the second place upon the glands (adenititis); on the blood (septic anemia, purpura, fever, septicemia); on the joints (arthritis); on the kidneys (nephritis); and on the nervous system.

"The sepsis here had in view is all swallowed or absorbed, and that infection with staphylococcal and streptococcal organisms carries with it certain definite and deleterious effects whenever it is found. These effects vary, naturally, with the site of the infection and the degree of resistance offered by the tissues which are the seat of the invasion.

"In the case of the mouth the mere presence of staphylococci and streptococci on the surface of the mucosa or on the tongue, or in the mouth secretions, or in the saprophytic flora which abounds in the mouth, does not of itself cause disease, any more than their presence on the uninjured skin. But the matter is totally different when they become seated in open wounds in the edges of the gums adjacent to carious teeth, or extend from this, their first site, downwards along the periosteum (peridental membrane) of the tooth socket. The infection is then no longer a superfical one—it is in connection with the soft tissues, periosteum and bone. The resistance of these tissues, especially the gums, is fortunately very great; hence a degree of infection which anywhere else in the body would certainly draw attention to itself by its redness, swelling, heat and pain, may indeed, cause redness and swelling, but does not necessarly cause any pain. This is the more to be regretted, for a feature of the septic infection in the gums, the teeth, or in the socket of the teeth is that it is infection in contact with diseased bone, and its virulence is intensely aggravated by this fact.

"The patient whose mouth is a veritable mausoleum of gold work is likely to present himself in a highly poisoned condition to his physician. The victim labors under the delusion that his mouth is well cared for when, as a matter of fact, the degree of sepsis and necrosis covered and hidden by the gold is perfectly appalling. Dr. Hunter speaks from experience. He has had many such cases and he described them in *London Lancet* as 'the most trying and pitiable cases with which one has to deal', for they are produced by dentists. The worst cases of septic gastritis, enteritis and colitis, of ill health, anemia, obscure septic fever and other manifestations of medical sepsis, are in Doctor Hunter's experience—so he avers—those in which the greatest amount of 'American Skill', in the shape of gold work, has been bestowed upon the mouth.

"There seems only too good reason to infer, moreover, that the Professional education of dentists is often of the most superficial sort. The profession is recruited in some American communities almost at haphazard. The training is frequently of the manual kind. Provided the student displays a digital dexterity in manipulation, he is not questioned too closely sometimes regarding his scientific knowledge. He goes about his work in the densest ignorance of such things as therapeutics and infection. He is no scholar and in no sense a man of science."

The first thing that strikes me about this scandalous article, is that it has already been printed and circulated. It is not one of those speculative things which may happen at some time in the far distant future, it has already happened.

Secondly, the article is based upon a good authority, whose standing and qualifications are beyond question.

Thirdly, the article of recantation in *Current Literature* for December, 1911, is rather perfunctory, as suggested by Dr. Kirk, in the January *Cosmos*.

This calls to mind what a Los Angeles dentist told me. The dentists there are maintaining a free dental clinic among the poor, at their own expense. But the newspapers of Los Angeles have never printed a word of commendation, or mentioned this charity in any way. But on the other hand they carry many inches of display advertising for the advertising dentists, "Painless Parker," et al.

Now an editorial in the *Journal of the American Medical Association* recently called attention to the fact that the newspapers do not mention any deaths as being caused by patent medicines, because the medicine manufacturers have a clause in the contract that if any news is published prejudicial to their interests, they can cancel the contract and discontinue their advertising. Thus, a considerable part of the great newspaper fortunes is built up out of the lives and sufferings of victims of these patent medicines, just as it is out of the lives and ill-health of patrons of fake dental parlors.

This is about what the dental profession can expect at the hands of newspaper publishers, as long as they do not contribute, and the fakir does.

Dr. Hunter's original medical article, published in the greatest medical journal in the world, has already gained over a year's start on its long, silent journey of ceaseless education of the medical profession against the dental profession and, in a measure, against dentistry. Month after month, year after year, its effects will broaden and deepen.

There are 250 medical journals in the United States alone. Many thousands of doctors are constantly writing articles for these journals. They are continually looking over the indexes of literature for something new and up-to-date. Dr. Hunter's material is just what they are looking for. And, given time enough, we may expect that his articles and similar ones will be quoted everywhere in medical literature.

As an illustration of how it is working, I will read a quotation from an article by Goadby which appeared in the *London Practitioner* for January, 1912.

"Then the 'crowned tooth' with which is included the 'bridged tooth' than which no more potent cause of oral sepsis, infection, rheumatism, anaemia and what not exists. This crowned tooth may also be a dead tooth with a sinus, which makes matters worse.

"There are crowns which are not the source of infection, but unfortunately they are few and far between. The crown of itself is not necessarily an evil thing providing its edge does not pass under the gum margin, so that the porcelain crown of incisors, etc. is less liable to cause trouble than the pernicious gold cap crown.

"The inherent fault in crowns is not their conception but tne method of their construction. The average gold cap crown passes under the edge of the gum, generally wounding the periosteum in the process of the fixing; it has, as a rule, a space of 1/32 to ⅛ of an inch between its rim and the encircled tooth, while in the interstitial area between the two teeth, the gum is not only pushed away from its attachment but is covered over with cement which gradually dissolves away leaving a cavity into which food packs, decomposes, and ulceration follows. But what can be said of the bridge, device by which two or more teeth do duty for six or more, and a bridge fixed, as it often is, upon teeth or roots already loose, whose periosteum is infected, in a mouth where pyorrhea has already become chronic. 'The bridge' is rarely made so that it can be kept moderately clean, its nooks and crannies at the back are hidden by the fair exterior and glitter of gold, while underneath putrefaction and ulceration are rampant. Bridges are rarely admissable and are always to be susupected."

I believe that we will all agree that in the past, cooperation with dentists or appreciation of the value of their services has not been conspicuous among physicians.

If Dr. Hunter's opinion of dentists becomes the opinion of all physicians, it is evident that the passive attitude of physicians is likely to become an active attitude of distrust and disapproval. I should consider such an outcome a great misfortune, not only to dentistry, but especially to the great mass of mankind.

Whatever may be the outcome, it is high time that the dentists began to take measures of self-protection.

I have heard dentists estimate that when the public is educated as to the value of prophylaxis, it will need twenty dentists where there is one today, to take care of the business. This awakening of the public consciousness on this subject will probably be accompanied by an awakening on the whole subject of dentistry. And the awakening may occur quite suddenly, instead of gradually. In case it occurs suddenly and the position of the dentist is not already strongly intrenched in the public consciousness, there will be an easy opportunity for the entrance of commercialism on a large scale.

There is one way, and one way only that I see of escaping such a calamity to the human race as this, I mean the calamity of a general commercialization of dentistry, and the inculcation in the public mind of the idea that the dental profession as a whole is doing dental work which is injurious and dangerous to the lives and health of those on whom they operate.

That remedy is to "take the bull by the horns" and not wait until you are attacked by the enemy. To sit quietly still and allow the enemy to sink his mines, place his masked batteries and then, when he gets good and ready, to touch off the fuse, is in my opinion suicidal.

The education of physicians should be commenced. This education means mainly to include a knowledge of the simple mechanical facts which constitute good dentistry as opposed to bad dentistry. This should be done by lectures before medical societies and by articles in the medical journals. Such illustrations may be used as those I have suggested using in the personal education of patients.

What else must the dentist do? I have pointed out in my other articles, that he must strengthen his position by the manipulation of public opinion in his favor before the enemy has fired a shot.

This may be done by (1) Collecting data to prove the causal relationship between mouth-conditions and bodily disease; (2) starting a battle-cry for "good dentistry," and educating the public as to the evils of bad dentistry; (3) becoming known as diagnostic authorities on disorders of health which have not yet progressed so far as to be recognizable or namable by the physician.

In the papers referred to, I have shown the first point, as to the necessity for collecting data and correlating it so as to prove the fact that a large percentage of the bodily diseases are due to bad mouth conditions which can be remedied by the dentist.

Regarding point two, I showed that prices for dental services are governed very largely by public opinion. If the public is educated as to the value of fine dental service they will be willing to pay a good price. If they do not know the difference between good and bad work, they will not be willing to pay much more for good work than a cheap operator charges for inferior service.

Good dentists are accustomed to allow their work to be confused with the work of inferior or careless operators. They allow the prices which are paid for poor work to lower the prices they would get for good work. By a "conspiracy of silence" they allow the public to remain in the dark as to the simple mechanical facts which underlie good dental work.

Suppose a dentist neglects to educate his patients as to the results of bad dentistry, and consequently a patient has cheap work done, either by this dentist or by someone else.

The question then arises whether that dentist is not morally responsible for the loss of life and conditions of disease which the patient suffers through ignorance of facts.

I suggest that each dentist begin to educate his patients on this subject, and do it systematically. For this purpose each dentist should prepare an exhibit or "clinic," which he can show to each patient who comes into his office. He should have a list of his patients, alphabetically arranged, and check each one off on this list as fast as they have been shown the clinic, and the facts as to good and bad dentistry are explained to them.

1. This clinic should include a typodont, showing a gold crown which fits and has proper contacts and contour.

2. It should also show a very badly fitting crown without contacts or normal contour, and with the gingival septum gone and food pockets and receding gums.

3. The dentist should also have a sample of some old extracted tooth with a crown which is about a mile too big and a partially absorbed root.

4. He can exhibit several sketches like Fig. 1, showing natural contour of tooth, and how, during mastication, this shape guides the food-current away from the thin gingival margin.

5. Also by a sketch like Fig. 2, showing how an unnatural contour causes the dynamic force of the moving mass of food to be expended against the gingival border, gradually forcing it down and forming food-pockets, and resultant pyorrhea.

6. Also show how the ill-fitting band causes mechanical injury, causes irritation and congestion, resulting in absorption of root, recession of gums and pyorrhea.

7. Also show how food material collects under an ill-fitting band and furnishes a delightful incubating spot for 100 species of bacteria.

8. Also show how the gum recedes in time, allowing entrance to

the saliva, whose solvent action dissolves the cement, leaving the surface of the tooth exposed to the action of the bacteria of caries. Yet the spot is so secluded as to render it impossible to clean away the gelatinoid placques under which the bacteria work.

9. Have a hollow soldered bridge of cheap construction to exhibit the unevenness and blowholes which afford a favorable lodgment of food and bacteria. If desired you can explain that the dentist could often save $20.00 to $50.00 or more in cost of gold on one operation by making the bridge hollow.

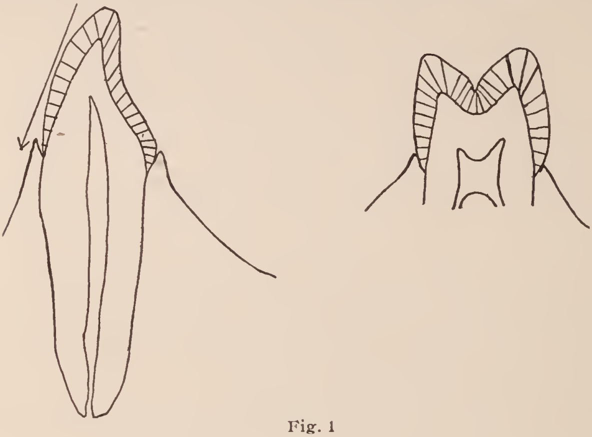

Fig. 1

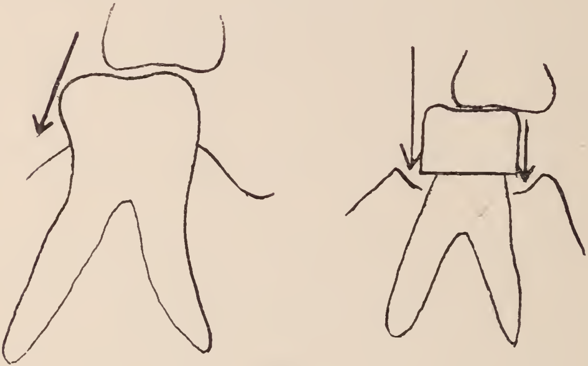

Fig. 2.

10. Have a dozen skiagraphs. These will show (*a*) That nearly all the crowns are ill-fitting, and their consequences; (*b*) loss of contact and its consequences; (*c*) unfilled or partially filled root-canals; (*d*) alveolar abscesses, pyorrhea, etc.

11. Have some ready made gold cartridges of several sizes.

Explain that they cost 75 cents to $1.35, according to size. Show how by omitting removal of most of the enamel, omitting, devitalizing and treatment and root-filling, one can set one of these cylindrical shaped crowns in 15 to 30 minutes, hastily pretend to burnish the edge in and make money at $5.00 per.

Show how the proper surgical preparation of the tooth and the fitting of the band will average five or six hours. The entire work on a well-fitted crown will be five to ten hours.

Ask whether they would rather pay $5.00 for a crown of death, or $50.00 or $100.00 for a crown of life.

Tell the patient that you refuse to deal in the former kind of crowns, because they smell too strongly of brimstone. Tell them your conscience will not allow you to do cheap dental work. That if you did it, every time a patient died you wouldn't be able to sleep nights, knowing that the rotten dental work in their mouths was perhaps the real cause of death.

Explain that over 125 bodily diseases have been traced to bad mouth conditions (1).

Explain that the mouth is the most important part of the body.

Explain that a mouth that lodges millions of pathogenic bacteria, and which is pouring pus down the throat every time one swallows, is the most dangerous of enemies to human life, because it is a poisonous snake whose presence is unsuspected. Explain how tuberculosis generally originates in the mouth, also pneumonia, scarlet fever, appendicitis and other infectious diseases.

It seems to me that the dentist is trying to get good prices for good work, from people who do not know the difference between good and bad work. In this, he is relying entirely upon the impressive power of his personality rather than upon the reasoning powers of his patient. Thus, he puts himself upon the level of a salesman who sells goods, not by virtue of having the best goods, but by virtue of being the biggest talker.

Such a basis cannot last. It is not a good foundation upon which to build up a line of business or a profession that can stand the storms of time.

People who will pay a high price for an article without having any knowledge of its real value, are not the kind of patients who will do the dental profession any permanent good except by the money

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1. See list of 125 diseases, and bibliography of do, in "The Natural Field of Dentistry," by E. H. Baker, the *Dental Cosmos,* June, 1912.

they pay for work. Whereas, one hard-headed, common-sense patient, who understands the mechanical difference between good service and poor service, will be worth more to his dentist in particular, and all good dentists in general, than a dozen of the unreasoning variety.

By keeping the public in ignorance as to the real mechanical facts of dentistry, the dentist is standing in his own light. He is standing in the way of his own financial interests.

He can advance the repute of dentistry and convince people of the need of good dentistry, only by showing the facts. And the facts will necessarily include a knowledge of the evils resulting from bad dentistry.

Let patients understand why most bodily infections originate in the mouth. Let them see how a mouth filled with the nooks and crannies of cheap dental work, furnishes the finest kind of lodgment for pathogenic bacteria and the poisons of decaying food.

Explain to the patients how the constant swallowing of pus, even one drop at a time, results in infection of the digestive tract, gall-bladder, appendix, etc.

Explain that most digestive troubles probably originate from the pus and bacteria thus swallowed.

Probably some of the patient's relatives who have died, had such a case-history. Digestion bothering them for several years, losing many of their teeth, then sudden death from some cause or other.

Now regarding the third point that the dentist should become known as a diagnostician of incipient disease conditions.

In another article (1) I have called attention to the well-known fact that differences in condition of bodily health are shown by the reaction of the gums, the saliva, etc., although a physician, by his tests, could find nothing wrong and would probably say that the patient was "sound as a dollar." This means that the dentist possesses diagnostic tests more delicate than those of the physician. It means that the dentist has a natural field of medical diagnosis, which by the nature of the case is not and cannot be entered by the ordinary physician. The dentist's patient perhaps has no regular physician, or if he has, will not go to him because he does not feel that he is "sick."

Hence, the physician, even if he understood the signs, has no opportunity to observe and point out these slight variations from the

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1. "The Natural Field of Dentistry," by E. H. Baker, Dental Cosmos, June, 1912.

norm of health, which are constantly evident to the eye of the dentist. These slight variations, if uncorrected, will result in more serious disease, and eventually in death.

Now the health conditions of the body might, with propriety, be represented by the curve FAG, Fig 3 (which is practically a "Gaussian curve" or "normal curve of error").

Suppose that perfect health is indicated by the point *A* at the summit of the curve. A small variation or digression from healthful body activities would be indicated by *B,* near the top of the curve. Another, larger fault in the normal bodily metabolism, might be indicated by a point *C,* farther down the slope. A serious disease (e. g. Bright's disease), might fall at point *D* on the curve; and death would be indicated by a point *H* or *E* at the bottom of the curve.

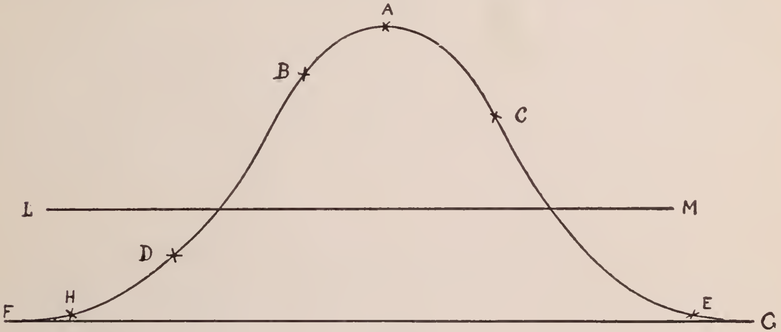

Fig. 3.

We will suppose that any chronic or acute variations from normal which are not "serious" enough to have attained to a definite nameable disease, with visible gross or minute changes in the anatomy of the principal vital organs, are indicated by points on the curve above the arbitrary line *LM.* But points on the curve which lie below the arbitrary line *LM,* are accompanied by anatomical or physiological changes which are evident to the eye of the physician. Variations in health in the region above the arbitrary line *LM* are easily recognizable by the dentist, but are not ordinarily recognized or considered of much importance by the physician.

"The field of medicine then divides itself naturally into two parts. The upper, or head part, includes the field of minor variations, as well as major variations. The lower part includes only major variations.

"The duties of the dentist bring him into daily contact with his field, whether he will or no. He has no choice in the matter. It is forced on his attention by the nature of his profession.

"The patient whose health is at the minor variation *B* or *C,* does not go to the physician because he feels that he is not "sick." And if he does go, the physician probably poohs at the matter and tells him there is nothing wrong with him and to think no further about it.

"Now it will be noticed that in this "smooth curve" there are no abrupt changes or natural points of demarcation by which one can say that just at this point health ends, and disease begins. On the contrary, any variation from perfect health will lead to serious disease and death if allowed to progress. The line of demarcation, *LM*, is an arbitrary line, whose distance from the base-line varies with the physician's ability to recognize disease.

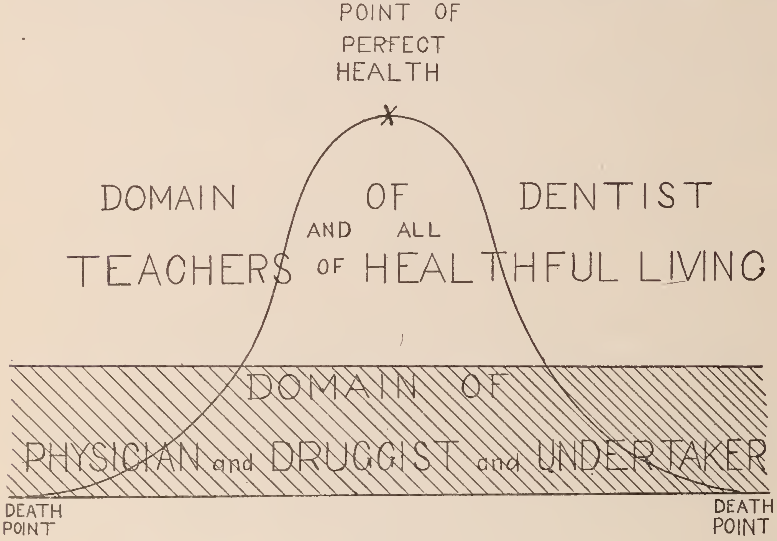

Fig. 4.

"The respective fields of dentistry and medicine are shown in Fig. 4. It will be observed from the form of the curve that dentistry is not in the tail of the curve.

"The mouth is probably (aside from the eye) the most sensitive index of bodily conditions which we have at our disposal. It is easily accessible, and its conditions are so evident as to be unmistakable. It offers the greatest opportunity for the diagnosis of diseased conditions which have as yet no other recognizable bodily symptoms and for which medicine has no tests.

"At this point, the work of Dr. Michaels of Paris, on saliva, of Dr. Kirk on saliva and bodily metabolism, and most recently Dr. Black,—offer unmistakable evidence of the mouth as an index of body conditions.

"My personal experience, after several months spent on saliva-analysis in Dr. Kirk's laboratory, has shown me many cases in which ordinary methods of urinalysis, blood-examination, etc., give no hint of the real trouble. Yet these cases responded instantly to treatment along lines indicated by Dr. Kirk's findings.

"The wonderful findings of Michaels in hundreds of different cases emphasize the seeming impossibility of explaining the diagnosis by saying that 'he happened to hit the nail on the head.' Analyses have been too numerous and results have been too uniform for that. And now comes Dr. Black's preliminary announcements of discoveries regarding calcific deposits. While his results have not as yet been corroborated, yet he is a man with the record of a lifetime for 'making good'; for going at problems in a careful, methodical way, and applying his wonderfrul 'common-sense' in a simple way to separate complex things into their component factors, and show the truth.

For the last five thousand years men have been treating disease in two ways.

"First: They waited until the patient was very sick,—until there was indubitable evidence that he was a very sick man.

"Second, they treated him by empirical (experimental) methods, without knowing whether any certain remedy was suitable, or not, and not knowing whether it would do any good or not.

"The day has now arrived when it is possible to see very early in the case whether the bodily metabolism is normal or not. It is no longer necessary to wait until the patient is ready to die with an incurable disease before finding out that he is sick.

"The dentist (not the physician) is the man who can sound this warning to the patient. He daily sees the mouths of patients who would not think of going to a doctor, because they are not "sick."

"Thus dentistry is on the verge of becoming more important than it ever dreamed of being.

"Instead of being the tail-end of the medical profession, instead of being a mere tooth-carpenter, the dentist of today is at the point where he can, if he steers his craft properly, be at the head (not the tail) of the greatest profession the world has ever seen—the profession which teaches healthful living.

"Out of the whole wide world, only in far-off China, have the doctors adopted the ideal office of the physician, by being paid to keep the family well. And if the family falls sick he is to blame and his pay stops. But, this is only a pretense, as his supposed curative powers were based upon magic, rather than upon common-sense methods of right living.

"But today, the dentist already knows many of the basic principles of right living. He knows the absolute need of exercise for the teeth by eating hard food,—food which excites a flow of saliva,—food, which if eaten from infancy, will insure freedom from green stain, from mal-occlusion, from decay. He is collecting statistics which may prove that the child of the rich, with his pampered body, cannot show the strength of tissue and the resisting power against bacterial invasion, which are shown by some of the poorest children,—simply because the poor child eats hard, simple food, and because he is more free from the evils of over-feeding.

"With the physician, the question of chewing of food,—of kind of food,—of quantity of food, are not sufficiently considered. The dentist realizes their importance. He sees the results every day. The physician does not see them. And because he does not see these results by means of his physical eyes, but he has to see with the "eyes of faith," the question seems to him a rather visionary one,—it is somewhat of a far-a-way unreality.

"Horace Fletcher told me that after he had written his first books, he worked constantly for five or six years before he could make any headway with his ideas. Here was a man possessing all the advantages naturally accruing to a successful author, lecturer and accomplished conversationalist. He had entree to the great newspapers and was often interviewed and written up by them. Besides this, although retired from business, he was a shrewd and successful business man and a man of wealth and refinement. Finally, his son-in-law, Dr. Van Someron of Venice, read a paper on the subject before the British Medical Association.

"The great English physiologist, Sir Michael Foster, happened to hear this paper, and through his recognition of the value of the subject, it finally reached the serious attention of the world. But up to that time, physicians never recognized its importance and too many of them do not today appreciate the paramount importance of mouth conditions or of proper mastication of food.

"It is the dentist who realized the necessity of right living. It is a dentist who has announced that calcific deposits may be caused by the simple and universal process of over-feeding.

"Does anyone suppose that these deposits are confined alone to the teeth? Are the valves of the heart immune? Are the coats of the arteries unaffected? Yet suppose a dentist were to talk from now till doomsday, could he expect to get the family physician to co-operate with him in trying to check over-eating in a family? In trying to get them to avoid eating of candy and preserves and pastry? In inducing them to eat some zwieback and parched corn?

"No, the dentist must depend upon himself. He must discover the first evidences of disease. He must see that right methods of living are taught. These healthful methods must be taught in the public schools, in lectures, in leaflets, in newspapers, by visiting nurses, by the dentist himself.

"And if he succeeds in inducing the patient to live rightly, there will be comparatively few cases of serious disease left for the physician's domain. The physician will then be obliged to change his profession to that of a health teacher, or else with the priest and the undertaker, be relegated to the consideration of the final passing away of the aged.

"However, the sound advice as to healthful living now being given in the public bulletins of municipal health departments, furnish an unmistakable evidence that medicine is beginning to turn its attention to advice about healthful living. Hence, dentistry will probably not win all the laurels in these fields. For the sake of humanity, let us hope that the spread of knowledge about the importance of mouth conditions will soon lead all physicians to change attitude of callous indifference to one of appreciation and help for the endeavors of the dentist.

"In the meantime, instead of arguing whether dentistry is a part of medicine, or whether it is the tail-end of medicine, or whether it is a separate profession, it will prove more lucrative for the dentist to "saw wood" for a little while. There is a legend on the entrance door to the Library of the University of Pennsylvania which reads "Talkers are no great doers."

"A little quiet, concerted, unpretending work at the present time will place dentistry in a new and enviable situation.

"No struggles, no shouting, no scheming are needed.

"The situation is already prepared. Here is the mouth, the most important part of the body. Here are the facts of its tremendous influence upon the rest of the body. In the mouth, appear the first indications of disease. In it are recorded instantly the effect of proper food requiring chewing. No need to analyze stomach-contents or examine the feces with a microscope.

"The healthful effect of exercise, fresh-air, vacations, freedom from worry, etc., are all instantly recognizable in the mouth. The ordinary blood tests may show only a tardy alteration, and ordinary urinalysis give no trace at all of the fact that, owing to changes in the habits of the patient, his health-index has just reversed its direction. Whereas the progress was lately towards death, the bodily metabolism is now moving towards life and health. Ordinary medical tests are almost too clumsy to detect the slight difference between the two conditions. Why, then, should the dentist feel any delicacy about lack of medical knowledge? It is not high-sounding phrases, or long words that count. It is ability to recognize conditions of disease as early as possible and prescribe a remedy. That remedy is healthful methods of living.

"The mouth seems to offer an index exceedingly delicate of the reactions of the protoplasm of the body cells. This index is as delicate and sensitive as a delicately poised wind-vane.

"In the mouth are registered the effects of mercury and other drugs, of periodical sprees, of overeating, of vacations and out-door life, of a thousand-and-one things which determine the life or death of the body. But no physician has tests by which he can determine such everyday occurrences as these. Only when wrong conditions have culminated in pronounced changes in the tissues or functions and after examination of the gross or microscopic alterations can the physician announce the presence of the disease. And the causes are then a matter of guess-work and 'case history.'

"But not only can the dentist detect disease before it can be named and before it has progressed so far as to seriously involve the body organs, but he should trace the causes and prescribe a new way of living which will cure.

"Let no one despise or underestimate the offices of the kindly, wise, and broadminded physician. But on the other hand, let the dentists remember that in his chosen province, the mouth, are the indexes and the keys to life and death.

"Dentistry has chosen its own location in the body. And this location is not in the region of the caudal appendage. It is in the mouth. And in accordance with this location, dentistry will not be the tail-end, it will be the head-end—with a big mouth, powerful jaws, and large, strong, clean teeth.

"These teeth will enable it to grind thoroughly the grist which is put into the professional mill. And the grist will include not only beautiful prosthetic work, skillful operations and careful prophylaxis, but daily preliminary diagnosis of incipient disease and advice about right living.

"And before long, this advice will be heeded as it is not heeded today, because the public will have been educated into the comprehension that the dentist knows what he is talking about.

"Thus the dentist will come to be esteemed by the community not only for the mechanical benefits but for sound advice on matters involving the life and death of the individual as well as of the nation.

"We might say then that there will be two kinds of professions. One profession, at the head, will consider disease which has only commenced, when death is as yet a long way off, where joy and hope are active. Here belong dentistry and the advisers of how to live.

"At the other end, where disease ends, are death, the pathologist and the prescriber of drugs, and the undertaker.

"Now there is no question that the human mind naturally seeks the society of the cheerful, of those things associated with life and hope, and health and youth. When dentistry has accomplished its wonderful stage of present-day evolution, the dentist will no longer be avoided as long as possible. He will be sought as one who brings health, and comfort and freedom from pain. People will go to him not because they have the toothache, but so that they will not have the toothache. His offices will become more and more preventive. And he will come to be welcomed as the most useful and popular and highly regarded member of society."

We must grant then a great breadth to this natural field of dentistry. The dentist, himself, at the present time, perceives this fact but dimly. Nearly all the dentists I meet, believe in the great importance of mouth-conditions as affecting bodily health. But very few of them see that the scientific establishing of the fact will immediately place the profession among the most important and highly esteemed members of the community.

Let us see why such a sudden change will occur.

We note that because food and money and the means of livelihood are a great necessity, we esteem highly the men who control the supply of food or money or other necessities. This is the reason for the instinctive honor which is paid to the rich and powerful in all nations and in every community. Because kings controlled the lives and property of their subjects, they were honored. The beggar who controls nothing receives no honor. The banker is honored because he controls money.

The priest is honored in just so far as it is believed that he possesses special knowledge about the location of the key to the gate of heaven, or has special influence with the angel who tends the gate.

The physician is honored in just the degree it is considered that he can influence the processes of life and death.

And the dentist will be honored and recompensed just in the degree that the public realizes his importance to human life and health.

If he chooses to occupy only a part of his field, as he is doing at present, he will receive only a partial reward in honor and in income.

If Dr. Horatio Wood said that the "badge of dentistry could be considered the badge of a partial culture" (1), it would be well to see whether there is any truth in the saying.

What does culture mean? Does it refer merely to elegant conversation, to literary knowledge or to table manners or social deportment? If it does, the dentist surely has no lack of refinement.

Does it refer to scientific education? The field of dentistry includes special mechanical knowledge and training, which are found in Engineering schools rather than in Medical schools. And engineers are cultured men available for membership in University Clubs.

We must conclude then, that if this saying applies at all, it applies only if the dentist is neglecting to cultivate all of his field of opportunity—to get all his professional privileges.

And when the dentist has assumed and exercised all of his natural prerogatives and duties, he will occupy a position at the head of those in care of human life and destiny.

In that day no dentist will feel that the physician despises his grade of knowledge or keeps him out of his rightful social or professional position, any more than the king worries whether his lords and nobles despise him. He knows they respect him, for he is at the top.

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1. *Dental Cosmos,* Vol. 53, No. 11, Nov., 1911, P. 1323.

A SURVEY OF ORAL HYGIENE.*

BY C. E. BENTLEY, D.D.S., CHICAGO, ILL.

The problem of Oral Hygiene in its relation to the masses has long passed the stage of vague inquiry and tentative effort, to an exact scientific basis which makes for thoroughness of understanding and efficiency of labor. To the best of my knowledge, the first scientific investigation of this subject was made by the Odontographic Society of Chicago 15 years ago. At that time, a committee from that body sent out a world-wide inquiry as to the care that was being given to the mouths of the little citizens of various countries. From the answers received some interesting facts were deduced. Sweden led the world in caring for its children's teeth. Germany and Japan came next in successful effort. The other nations showed through different degrees of interest down to Great Britain, which had done comparatively nothing to further the health and happiness of its people in this particular way. It was noticeable that whenever under a paternal form of government, the state, was responsible for matters of public welfare this matter of oral hygiene was held important, and attention to it was followed by excellent results for public good. To this matter of governmental responsibility I will call your attention later.

As a result of this investigation by the Odontographic Society, and the publishing of its report, very general interest in the subject began to be shown. Desultory efforts to meet the needs of the situation were made in various parts of the country. There are few states which cannot show the ruins of some such effort—efforts made with the best of intentions and more or less enthusiastic zeal, but resulting, as all unorganized, unscientific effort is sure to do, in failure more or less complete. Organization is the key-note of modern civilization and nothing which involves the welfare of numbers can hope for success unless whipped into shape by this effective agent. Love for humanity, the enthusiasm and zeal which makes for reform are the *sine qua non* of civilized society. But these are the great underlying forces at the beginning of movements, they set things in motion, but if order and system and coordination do not direct those same motions, the efforts of the reformer are in many cases more attended by disaster than by helpfulness.

I have made quite an extensive inquiry throughout the country among known workers, who have been prominently identified with the progress of this movement. The history of the work would baffle classification, and will not be attempted here, its worth being only historical. Many of the answers to my inquiry are confidential. The text of the great majority of my replies from those who have had experience and whose names are respected in the profession is—*"caution."*

The most prominent danger signal adduced from my replies is the untempered enthusiasm of those who would rush in without experience or counsel, anxious only for the spotlight and temporary personal preferment.

Says one, who is nationally known:

"The number of irresponsible and illy balanced men who have rushed into this thing will certainly wreck it unless the men of affairs hold it with a steady hand."

Another says: "We must, however, keep working away with caution and method under official sanction and control. The task is so enormous that if anything of real value is accomplished in the next ten or fifteen years, the dental profession will have reason to congratulate itself;" and so the thread runs through the maze of replies received.

We, of Chicago, are conversant with an attempt recently made by an individual whose only permanent result was the featuring of his attempt and exploitation of himself in the daily press. But, to return to the thread of my argument before this digression:

Gradually, efforts of various dental bodies became organized. And besides this a great wave of interest in hygiene seemed to sweep over the thinking world. Better housing for people, sanitation of work-shops, ventilation of public places, the regulation of sweat-shops—all these are parts of the hygenic reform, making for public and individual welfare, which passed over the country. In the midst of this intense hygenic activity, came Horace Fletcher—that apostle of simple living and perfect health, who gave the results of his experiments to the world.

Thorough mastication of food is the basis of health, said Fletcher. How masticate with imperfect teeth, said an observant world, and forthwith the mouth became, to the thoughtful layman, what it always has been to the experienced dentist—the gate-way to health and physical efficiency. Without a doubt, the Fletcher propaganda has done more to make the average man respect his teeth, than any other single force outside of the dental zone. When the Chicago Dental Society, a year ago, in pursuance of its policy of educating public sentiment, invited Horace Fletcher to speak at an open meeting, the success of the occasion outran the expectations of the most optimistic. Orchestra Hall was packed to its capacity by an attentive and appreciative audience, and crowds were turned away from its doors. The press of the city gave courteous publicity to his ideas and both press and people showed that there was a vivid awakening along lines on which we dentists have toiled for many years.

Contemporaneous with this aroused thought in the general world, certain leaders in the medical profession emphasized, with startling effect, the fact long known to science, viz: that the tonsils, the gate-way to the throat, become infested by bacteria from unclean mouths and diseased teeth, thereby giving rise to the various diseases of the throat and to a generally impaired condition of the body through the alimentary tract. Thus, the testimony of the medical world strengthened that of the dental world, and the business of keeping the mouth clean and healthy became a very important thing. When, at last, the public is keenly alive to the importance of perfect hygiene of the mouth, it is safe to predict that this matter will be intelligently attended to, in the average American family where pecuniary means will permit, but what of that large majority that fills the schools in this democratic country, whose great problem is not so much the chewing of bread as the getting it? From many years of experience in the examination of the mouths of the rich and poor, it has been observed that the mouths of all children at the age of 6 or 7 years—the age of school entrance—are about alike. From this time on the children of the wealthy and the well-to-do are cared for by the family dentist and some power should see that their poorer brothers receive a no less vigilant care, in spite of the handicap of poverty.

The dental profession has arisen to the demand of the hour in this matter with promptitude, in many cases at personal sacrifice. In Rochester free clinics have been established and such is the case in the city of Cleveland. In New Jersey the state has contributed a fund for this purpose, and in my own city of Chicago a public-spirited citizen has given $15,000.00 for the good work. Boston heads the line with a donation from Forsythe Brothers of $2,000,000.00, to be used for the welfare of its children, and there are many other instances.

All these devoted efforts of a profession and of individuals cannot be too highly valued. The world is grateful for it and gives honor to whom honor is due, but this is only the beginning of a work whose permanence and lasting efficiency call for work and workers which transcend the ability of any group or individual. In this twentieth century nothing that affects public welfare can be confined to the individual or a restricted group. The whole trend of modern thought is toward what some one has called "collectivism," which word, used in this matter, means "emphasis on public welfare and public right rather than private welfare and private rights."

Says Rauskenbusch: All constructive proposals today are tending to increase the movement of public ownership and public functions. All public spirited movements are working in the same direction. There is a curious unanimity running through the entire civilized world, making in that direction. It raises a kind of presumption of historic destiny.

The activities of olden days have gradually passed from private to public ownership: Public roads and bridges and streets were once, to a large extent, under private ownership. There are still a few toll roads in this country, curious relics of an ancient order. Toll bridges, owned by private corporations are now generally publicly owned. Fire companies used to be private enterprises and even the courts were under private control, to a certain extent. Warfare, too, used to be a private enterprise, even nobles of low degree having the right to make war and to plunder. War is now a collective undertaking, participated in by the people at large. Government used to be a private affair. Private individuals did the governing and made what they could out of it. Today, through democracy, governing has become a public and collective undertaking. In modern times other things have become collective. Education was purely a matter of private enterprise until Horace Mann showed how to make it collective, and today private education has narrowed down and public education become one of the foundation stones of modern democracy. Our Post Office, once a private affair, is now a collective undertaking. The water supply in most American cities is now publicly owned, and while there may be some dissatisfaction when there is public ownership, the public has a ready means of redress. Other countries have gone much further than America in extending the scope of public ownership. In many European cities gas, electricity, electric light and electric power, the telephone, the telegraph, the parcels post, railways, theatres, opera houses are all included in the things collectively owned.

Increased interest in public health, in our own country, has widened the scope of public ownership. When we own our water supply we are compelled to lay restrictions upon the area from which our supply comes. In England tenement houses are summarily dealt with in the interest of public health, in many cases entire sections being torn down for sanitary reasons. "The time is coming when our American municipalities will have to go further in the direction of collective ownership," says a prominent social student, "in order to protect the health of our citizens, for instance, in caring for the sanitary character of milk and ice supply. Ice has become a necessity, a part of life in our modern cities, under present conditions, and it ought not to be tolerated that the price of ice be fixed by a monopoly. Coal also. In Germany there is a demand that drug stores be run on behalf of the public and drugs sold at cost price. One who knows of the adulteration of drugs in America must be interested in such a move. Some of the most necessary drugs like antitoxin and vaccine are furnished by municipalities."

Following this modern trend to collectivism, it is inevitable that a matter that so closely touches the public welfare as this problem of oral hygiene should pass from private undertaking to a municipal control. Let me quote some significant words from a strong paper recently read by Dr. George E. Hunt, before the Chicago Dental Society—words which I cannot too strongly endorse:

"Free dental clinics are necessary and they will come. But they are of right a state affair and the state should support them. In many communities, no doubt, they can be secured by the cooperation of the dentists with charitable organizations or with philanthropists, as has already been done in New York City, Rochester, Newark, Boston and other communities, where individuals or organizations can be persuaded to assist in the work to an appreciable degree, or where the dentists have the assurance of such assistance if they prove the worth of the movement, by all means should clinics be established without waiting for the state to act, for to my mind, the establishment and continuance of free clinics is one of the last steps in the problem. But, it is the state's work, and until the state undertakes it, the free clinic will be on a precarious and insecure footing. The state is a beneficiary in making these children better physically, therefore the state should shoulder both the responsibility and the expense."

These ideas I strongly endorse and they are, I may say, pure collectivism as applied to the matter of oral hygiene. The municipality should be charged with this affair for it has all to gain in caring for the health of its citizens. After dentists have partially organized the work, the whole thing should pass under the control of the government, the work of the profession then becoming purely advisory and its assistance taking the form of creating and keeping alive public sentiment. But, right here, to my thought, is the crux of the whole matter. How to get the municipality to assume such an undertaking? There are several causes which militate against the success of such suggestions coming from dentists. First, and foremost, their motives would be suspected. This is unfortunate and unwarranted but nevertheless true. Any movement that will increase the clientele of a given group, if advocated by that group, fails to be convincing. Then, too, dentists, as a body, are not trained in getting governmental aid and have not the ear of governmental authority. But there is a group in every community which has all these requirements—social workers and their allied organizations, those in settlement houses and in other organized work for the benefit of humanity have all these necessary equipments. Their motives in pressing such a matter could be nothing but altruistic. They are trained in getting government aid, and by their labors have gained the ear and confidence of those in authority. Above all they have the confidence of the people whom the movement is intended to benefit. The history of kindred activities in Chicago will prove this claim to be true.

1. The nurses are now in the public schools as a result of the work of a committee from the Visiting Nurses' Association of Chicago, which by an act of the City Council was turned over to the Health Department.

2. The Tuberculosis Dispensaries were started by the Visiting Nurses' Association—was continued by the Tuberculosis Institute and finally transferred to the Health Department.

3. Tuberculosis nurses for the Tuberculosis Dispensaries followed the same path of the dispensaries.

4. Infant welfare started by the Woman's Club, continued by the Milk Commission by act of Council, transferred to the Health Department.

5. Medical Inspection started by the Board of Education. Interrupted, resumed temporarily as a result of scarlet fever epidemic, finally taken over by the Health Department.

6. Municipal Lodging House started by City Home Association. Taken over by the Health Department.

7. Iroquois Hospital. Started by Iroquois Hospital Association—a group of charitably disposed men and women. By act of Council transferred to the Health Department. In each of these instances the sentiment was created that made the work one of permanence by a group of workers more or less allied or identified with the work of social service.

A recent and important instance of this government extending its care to its children through a social worker, is the appointment of Miss Julia Lathrop, of Chicago, by the President, to the newly created Children's Bureau, formed to look after the welfare of the nation's little ones. All the splendid work hitherto done by individuals and private groups for the benefit of the child—such as the inquiry into the condition of child labor in mills and factories, the protection of girls under age, and all the avenues of life in which the child is found—all this devoted labor has reached the right condition to be assumed by its proper sponsor, the government—and when a head was needed to direct the work the government selected one long trained in social service. That is my just hope for the free dental clinics of America—sponsored by the government, local or state, and administered through the well-trained hands of social service workers, the dental profession having *supervisory control* and standing ready at all times to counsel.

Again, I think the work can be greatly facilitated by working with an organization of laymen rather than with dentists alone. Public spirited men and women who are more or less identified with the work of civic uplift, together with dentists who are willing to make the sacrifice that the work demands will, in my opinion, hasten the end that most of us seek in placing this work upon a permanent and lasting basis.

The reasons for such an organization in any community must be obvious without any further elaboration from me at this time.

But before anything can be done, in the matter of transferrence of responsibility and labor, it is up to the dentists to prove conclusively the economic value of the hygienic methods they advocate and practice, and the widest publicity must be given these facts.

We must prove, beyond peradventure that the physical efficiency of a child is advanced or retarded in proportion as oral hygiene becomes a dominant factor in its life. If, in the experimental squads practiced upon in various communities, it can be shown that their physical and intellectual efficiency have been increased, this must be shown and proclaimed through the powerful agents of publicity. We have gone a long ways toward the establishment of an argument that may be advanced for municipal or state control. From an economic standpoint, it is the business of the state to look after the right culture of its citizens, so that instead of producing wards and dependents it may produce self-sustaining and helpful citizens. This no thoughtful person can refute. This fact of economic value being established, we have a warrant for asking that this work be taken over by social workers, and put into the hands of dentists paid for consecutive service. Such, fellow-workers, is to my mind the relation in which our profession stands to the public good. We have started a work of exceeding importance. Let us pull together and bring to it that perfection which will warrant our presenting it as our donation to the public weal—for any group is of value only in proportion to its contribution to the public welfare. Our work, heretofore, has been largely confined to developing a culture of our own, let us grasp man's highest privilege and devote our earnest efforts to the benefit of our fellows.

PROCEEDINGS OF SOCIETIES.

AMERICAN DENTAL SOCIETY OF EUROPE, THIRTY-NINTH ANNUAL MEETING, HELD AT BRUSSELS APRIL 5TH TO 8TH, 1912.

DISCUSSION OF DR. SPAULDING'S PAPER, "THIRTY-SIX YEARS' EXPERIENCE WITH LEAD IN THE TREATMENT OF PERFORATED TEETH, AND TEETH WITH ENLARGED FORAMINA."*

Dr. E. F. Day (London)

said it was a delightful experience to see the beautiful examples of work and to hear how successful lead treatment had been. He himself had had about ten years' experience of the treatment and could endorse all that Dr. Spaulding had said. Dr. Spaulding had referred to losing two cases in 36 years, an infinitesimal percentage, but he himself had not had a case go wrong where the lead point was properly put in, and he did not think he had lost a tooth where he had used the lead treatment. He did not hesitate to push the point through the end of the root, and at Rome he exhibited skiagraphs showing the points going right through the end. He very often dipped the lead point in chloro-percha with a little eucalyptus, his idea being that if there were any small places which the lead did not fill in going through the roots the chloro-percha would be squeezed into them.

Dr. A. N. Davis (Berlin)

was sorry Dr. Spaulding did not show an X-ray picture of the case with the root filled where the perforation was through the side. It was almost impossible to determine in many cases whether a perforation was there or not in such cases. Some years ago a dentist in Chicago recommended using tin points, and in two cases where the perforation was through the side he himself wrestled for an hour to get a tin point in the proper direction. In the last few years he had filled perforations with paraffin wax, which was absolutely non-irritating. Not only could the root be properly filled but it could even be forced beyond the end of the root without a particle of irritation, and was readily removable. It had been used a good deal in surgery and in building up the bridge of a nose and such things.

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*This paper was published in the October number of the Dental Review.

It retained its form and could not be dissolved. As far as he knew he had met with success with that material, but he would like to know whether anyone had seen any failures or could tell him whether he was right or wrong in continuing its use.

Dr. G. J. Hofmann (Wiesbaden)

said he had been much interested in the paper as he had also had occasion to treat such cases and had treated them with success. He cleaned the tooth as thoroughly as possible, prepared a copper amalgam, mixed with iodoform and filled the perforation, trying not to squeeze the end of the root but to bring it as high as possible. He used that treatment in a case of perforation of the side of the tooth, an especially unfavorable case as the patient had pyorrhea. After cleaning the tooth thoroughly with H_2O he closed it up with CuA and iodoform and about a year ago he found the patient had the tooth still.

Dr. W. M. Cooper (Frankfurt)

said he had had occasion to use lead points a number of times and always with success. It was necessary that the lead should be absolutely pure. He obtained his own pure lead by obtaining a solution of acetate of lead and evaporating it, collecting the residue and fusing it and drawing it down through a draw plate. That gave a number of different sizes of lead wire that would give any lead point required. At the beginning of the year he had occasion to treat a central incisor that had been treated in Japan 25 years ago and for 25 years the patient said there had been a discharge from the tooth. After treating the tooth with a lead point the pus disappeared and the inflammation went down and a short time ago he had a letter from the patient saying that everything was perfectly satisfactory.

Dr. G. Fay (Brussels)

said some years ago a paper was read before the Society on the implantation of teeth with lead roots, the teeth were made with lead roots and implanted and became fixed.

Dr. A. Pfeiffer (London)

said as there was normally a small space at the apices of the teeth and that space was greatly accentuated with suppuration he would like to know why Dr. Spaulding was so very particular to prevent the lead point going through at the end of the root, seeing that lead was so comfortably tolerated by the tissues. Since Dr. Day read his paper in Rome he had had occasion to fill a few teeth with lead and had paid no attention to accuracy as long as he got the lead just a little way through, making sure that the apices of the teeth were fully closed, and all those cases had been perfectly comfortable.

Dr. J. H. Spaulding

in reply, said he had never used chloro-percha in the treatment of such cases; he always dipped his point into lactic acid and sometimes into H_2O before driving it into place. With regard to copper amalgam, it was a very fine disinfectant but the problem was to know how far to go with it and how far not to go.. It seemed to him the suggestion for the use of paraffin was a very good one because paraffin seemed to be tolerated in the tissues and might be even more effective in the treatment of perforations owing to the ease with which it could be forced in. He agreed that it was necessary to have as pure lead as possible and he obtained his lead from the people from whom he bought all his pure minerals. With regard to accurately keeping to the apex of the root he did that because he liked to do all his work as well as possible with careful attention to detail, but he did not object to going through the end of the root. He would much rather go through 2 millimetres than stop short half a millimetre. He knew of nothing that was less irritating than lead in going beyond the end of the root.

DISCUSSION OF THE PAPER OF DR. BÖDEKER ON "THE ULTRA-MICROSCOPE."

Dr. W. Dunn (Florence)

said in one of his previous lectures Dr. Bödecker promised to say something about the minute structure of dentin which he was about to study by the ultramicroscope and he should be glad to know whether Dr. Bödecker was now in a position to bring forward some of the results of his studies, especially as to the point of whether Neuman's sheath was a tube or a fibre or what.

Dr. George Cunningham (Cambridge)

asked whether the spirochaete could be seen in motion through the ultramicroscope. He had had the privilege of looking down a giant ultramicroscope in Messrs. Pathe Freres Laboratory and of seeing his own saliva, and the experience was illuminating.

Mr. Brunton (Leeds)

said it was an extremely interesting thing from an outsider's.

point of view to see the advance which had been made and he hoped he should be able to live to see the life history of the organisms with their marriages, festivals and funerals.

Dr. C. F. Bödecker

in reply said he did not believe the ultramicroscope would be an epoch making invention for histological research but for bacteriological research he believed it would prove of some value. He was sorry to say he was not in a position as yet to give a definite answer to Dr. Dunn's question. Researches occupied a much longer time than one imagined and it was necessary to make perfectly certain before one brought forward any point. In reply to Dr. Cunningham he had seen the spirochaete in motion and all the bacteria could be seen in motion but sometimes it was difficult to say whether it was the motion of the general surrounding medium, or whether it was a motion of the bacteria themselves.

DISCUSSION OF THE PAPER BY DR. BÖDECKER ON "THE DANGER OF ARSENICAL NECROSIS AVOIDED BY A RADIOGRAPH."

Dr. C. H. Abbott (Berlin)

said he had had a few such cases as those described in his own practice, the X-ray having shown the absorption of roots by impacted third molars. In all doubtful cases X-ray photographs were taken, and he would just as soon be without a telephone as without the X-ray appliance.

Dr. Fay, Jr.

said a few years ago he assisted at a dental meeting where a confrere from Antwerp who made a study of anatomy and had investigated a great many skulls showed that the third molar was always existing. Even if it were not apparent it would be found embedded in the bone, and he said he had never during all the time he was preparing at the University noticed that the third molar was absent.

Dr. C. F. Bödecker

said he only knew of one exception and that was in the case of his father, who had never had the third molar extracted and yet skiographs showed it was really missing. In many cases where the patients said they had had no third molars the tooth could be found lying in the bone. A few days previously a lady had complained of slight pain in the second molar and on taking a radiograph he found the third molar embedded deeply in the bone. The upper molars did not seem to cause as serious trouble as the lower molars; they usually struck the root and not the crown. If they struck cementum or dentin they could absorb it and very little hindrance was offered to their progress; whereas in the lower they frequently struck enamel which they could not absorb, and there were acute inflammations round the ends of the roots of the third molars.

Mr. Brunton

asked whether Dr. Bödecker had examined the ascending ramus of his father's jaw, because the third molar had been known to be lodged there. There was an impacted third molar in the jaw of a young gorilla in a London museum.

ILLINOIS STATE DENTAL SOCIETY.

FORTY-EIGHTH ANNUAL MEETING, SPRINGFIELD, MAY 14-17, 1912.

DISCUSSION ON THE PAPER OF DR. BAKER.

Dr. Arthur D. Black, Chicago:

I was naturally, as I know you have been, interested in this paper by Dr. Baker. It presents to my mind two principal ideas; first, a very severe criticism of the dental profession by Dr. Hunter and other noted Englishmen; second, it holds out before us some of the possibilities of the future.

I wish to speak, first, regarding the criticism of Dr. Hunter. No man who has worked with earnestness in the dental profession could help but resent the statements of Dr. Hunter; no man who takes pride in the dental profession could help but feel that Dr. Hunter had applied to the whole profession a criticism which ought to be applied to the worst of us; yet there is really so much of truth as a foundation for Dr. Hunter's criticism that we must take it seriously. I am sure that the suggestion made by Dr. Baker is correct that Dr. Hunter's criticism would be more true if he had left out the words "American dentistry" and applied it to all dentistry, because certainly the dentistry of America is not to be set aside as worse than the dentistry of England or the dentistry of the Continent. In England it is a very common criticism among the people to say that Americans have bad teeth because they see so much gold in the teeth of the Americans who go over there. It is my observation in England that exactly the same criticism could be made of the Englishmen, the only difference being the gold was not there. (Laughter). I had a peculiar experience in one of the large department stores in London. We went in to do a little shopping, and the floor-walker greeted us with a smile, showing that he was short the crown of one upper central which was decayed almost down even with the gum, and he seemed to enjoy showing it. There was no American dentistry there. If there had been, he would have been a pretty good-looking floor-walker.

It seems very unbecoming for an Englishman to make such a criticism of American dentistry because there is no civilized country where dentistry is so far behind as it is in England, and this is because dentistry in England is absolutely controlled by the medical profession. (Applause). A man cannot practice dentistry in England without passing under the scrutiny of the Board of Medical Control. They are the men who issue license for men to practice dentistry in England, and it is unbecoming to make a criticism of dentistry and put so much emphasis on the word "American."

The time has come, however, when we must, as has been suggested by Dr. Baker, take careful stock of the situation that we have before us in the dental profession, not only in this country, but everywhere. The criticisms of Dr. Baker are not as definite as I would like to see them, because we will derive more benefit from specific than general criticism. To make the general statement that our work is bad does not help us as much as to tell us exactly wherein we are in error.

Dr. Gilmer has spoken today of the neglect of cavities in the bones caused by chronic alveolar abscess especially, and the very serious systemic conditions which result. We all know of patients who have chronic alveolar abscesses which have not been cured. A good many men have shown us within the last few years that the presence of such a focus of infection, no matter whether or not the tooth is tender to pressure, no matter whether or not the patient has the symptom of pain, is a menace to the life of the person, and in many cases they have caused death. If that is true, is it right that we allow a single tooth to remain in the mouth of a single patient if it has a chronic alveolar abscess? I say, no. It is not right that those teeth should be allowed to remain in. We ought to extract, in the State of Illinois, a good many thousand such teeth if we would serve our patients as we ought to serve them.

Dr. Frank Billings read a paper before the Chicago Medical Society a short time ago, on "Local Foci of infection in relation to General Systemic Conditions." His investigations were conducted over a period of several years and in those investigations he considered the tonsils in particular. Dr. Billings reported thirty cases of rheumatism, multiple arthritis and similar conditions, in which the removal of the tonsils either cured the patients or very materially benefited them in eighteen cases. In these cases streptococci were found in the tonsils in almost every individual. These organisms were injected into guinea pigs, and in practically every case the guinea pig developed general infection similar to that which the patient had, and in a considerable number of cases the guinea pigs died of that infection. If an infected tonsil will cause these conditions, chronic alveolar abscess will do the same, and so will a pyorrhea pocket, or any foci where pus is formed and gradually fed into the system.

Dr. Rosenow reported four cases of endocarditis which were traced to pyorrhea; two of the patients died. Are we doing right in cases of pyorrhea to treat for an indefinite time the pockets about necks of teeth, phagedenic pockets in which pus is formed constantly or intermittently, and the pus is absorbed by the patient? We are not. We ought in the next thirty days to extract fifteen or twenty thousand teeth for our patients who have pyorrhea. I think the time has come when we must consider pyorrhea from an entirely different standpoint from which we do today and treat it differently. I said in a paper read before the Chicago Dental Society recently that the dental profession is not so much in need today of more specialists in the treatment of pyorrhea as it is of more dentists who will make it their specialty to prevent it. (Applause).

I want to present the following as a third group of conditions to which we ought to pay more particular attention. Wth the assistance of some twenty men scattered from Pittsburg and Buffalo to Seattle, I collected for the paper mentioned, reports of careful examinations of the mouths of something over five hundred persons. From these five hundred there was separated a group of three hundred and seventy-six persons who had no pyorrhea, and whose ages were from twenty to thirty-five years; persons whose mouths ought to be in good condition, so far as peridental disease is concerned. In the mouths of these 376 persons we found 3,050 areas of inflammation; about two-thirds of these due to bad contacts or bad margins of fillings or crowns, and about one-third due to the presence of deposits of calculus. There was an average of more than eight areas for each individual examined. These were young persons who had no pyorrhea, who were taking good care of their teeth and who were going to their dentists regularly.

We have not recognized in the treatment of pyorrhea or in the pathology of pyorrhea the fact that a little inflammation of the gingivae must precede pyorrhea, that there cannot be detachment of the peridental membrane unless there is a preceding gingivitis. Why do we not treat the gingivitis? We have not been doing it. We have not treated these cases until there has been a detachment of the peridental membrane. Patients have come in with two teeth separated a little, so that food wedged between them, and the gingivae was inflamed. Such a condition has received no attention, yet each such case presents an opportunity to prevent a case of pyorrhea. Most of the teeth which are lost from inflammations of the peridental membrane are lost because inflammations of the gingivae have been neglected.

Therefore, I would like to present these three definite conditions in the treatment of which we can all serve our patients much better if we will only make up our minds to do so. There is nothing in the treatment of any of these conditions which any one of us cannot do well. We can cure chronic alveolar abscesses, without exception, although in the majority of cases we will have to extract the teeth to do it. (Laughter). We can cure every case of pyorrhea that comes to us, without exception, because we know they get well when the teeth are extracted, and if we cannot cure a case of pyorrhea without extracting teeth, the best service is extraction. We are not doing justice to ourselves and to the profession to treat these cases otherwise, and it is our neglect of such cases which has brought on the criticism of Hunter.

In the third group of cases, in which there is only a gingivitis, we have a chance to cure pyorrhea by preventing it, by building out proper contracts, by taking time enough to do whatever is necessary to cure the gingivitis and thus prevent the more serious conditions which are sure to follow, if the gingivitis is neglected.

Dr. Baker has held before us a very rosy possible future for the dental profession along preventive lines, and has suggested several times in his paper that the medical profession has not the opportunity which the dental profession has of noticing and diagnosing the systemic derangements manifested in the mouth. If he had said something more in detail as to what systemic conditions we ought to be able to diagnose in the mouth, and what the signs of these are that may be found in the mouth, it would have given us something more tangible, something that we could study and apply in practice. I am willing to agree with him that the dentist, above all persons, is and ought to be able to recognize in the mouth any deviation from the normal. I am willing to agree with him that there is before us in the mouth the greatest field for pathologic study that has ever been opened to the dental or medical profession. Dr. Michaels, to whom he has referred, has called attention to the fact in his examinations of the saliva that any deviation from the normal in the saliva is of first value in the diagnosis of disease. To cite an illustration: In making examinations of the urine, we have the normal percentage of urea, of other poisons that are excreted through the urine. In making examinations of the urine we say that when there is a deviation from the normal, there is something wrong with the patient. Normally, there should be none of these poisons excreted in the saliva. If we find any urate crystals in the saliva, we have a pathologic condition, and examination of the saliva should be a more accurate index of the deranged systemic condition than is the examination of the urine, and I believe it will not be many years until the examination of the saliva will be considered of much importance in the making of a good physical examination.

There is one other phase of the subject I wish to speak of. Dr. Baker has spoken of the financial possibilities of this new field that is open before the dental profession. I think the dental profession is facing today the most peculiar situation, from a pathologic as well as financial standpoint, that has ever been placed before it or any group of men. Here is a great wave of public interest in mouth hygiene. That wave is not one that the dental profession brought on. It is hard to tell where it came from. It came on us and we are not ready for it. Yet it is here and we must meet it. It came just at the time when our dental schools had, during a period of five years, been graduating less than half the number of men they were graduating previously. Therefore, we have a less number of dentists in this country today in proportion to the ordinary demands for dentistry, and we have added to the ordinary demand, the additional thousands which must inevitably come as a result of the campaign in mouth hygiene. What are we going to do with these people?

In the matter of operative procedures, we are today criticised because we have been careless in our operations, largely because we have been busy; because we have had so many patients that it was hard for us to take care of them and to give each one the time we ought to give him or her to do things right. Is the effect of the extra number of people coming to us going to lead us to be more careless in our work, and, therefore, do operations less well, or how are we going to handle this situation? Are we going to turn people away that we cannot take care of because we have not time to do it? Are we going to have cheap dental schools that will create men of low or poor calibre to take care of these people? This is a question that requires considerable study for its solution. There was never a time when there was such an opportunity for the men, especially the young men, who are willing to study and to consider all phases of this question.

One other word and I am through. Dr. Baker and Dr. Hunter and many others have taken the stand that the dental profession must know much more of general medicine if it is to handle the problems that are to come before it in the future. We must all recognize that. On the other hand, I think we can say just as strongly and just as truly that the medical profession must learn more of dentistry than they do at the present time if they are to do their part in this work. I have a conviction today that there is no group of men that has less appreciation of the possibilities of modern dentistry than the members of the medical profession. (Applause). It is going to do no good for us to tell them so in the same way that Dr. Hunter has criticised us, because that will only drive the two professions farther apart. There is a good deal of truth in Dr. Hunter's criticism, and it behooves us as a profession to study the problem, and eliminate, as far as possible, those conditions which brought such a criticism upon us.

Dr. A. G. Smith, Peoria:

I enjoyed Dr. Baker's paper more than I can tell you. I do not know by just what chance it happened that I read the original article which he quoted for us, by Dr. Hunter, of London, and in which we American dentists were in whole and in part so ably and mercilessly assailed, but I think with Dr. Black that while we deeply regret all this volume of criticism that has been precipitated upon us, we cannot do otherwise than to admit that there is a very great deal of truth in what has been said by Dr. Hunter.

I think it would be the very exceptional man who was not, in a measure, guilty under the indictment Dr. Hunter has brought, and few there are of us who have had the courage to always condemn a tooth that was beyond hope of salvation and insist upon its extraction when we found it was beyond the reach of our skill. To listen to such a talk as that of Dr. Baker has been of the utmost benefit to every man here, and to gaze upon the picture that has been painted with regard to our responsibility and with regard to the possibilities of the practice of our profession is a very inspiring thing indeed.

Let us consider in connection with this subject where it takes hold of each one of us personally. I had a patient come to me not long ago, to whom money was no object. She was faithful to her dentist almost unto death, fortunately his death, and not hers (Laughter). He was of the flat amalgam filling type—an honest, kind, conscientious man, but woefully incompetent. This patient was discouraged, downhearted, utterly despondent so far as any serious attempt at making her mouth even partially good to look upon and partially useful was concerned. She said, "Doctor, patch these teeth up a little, and after a while I will have them all out. I have been going to a dentist every six months for twenty years to have my teeth fixed, and I am discouraged." I said to her, "You will not have to go as often as that in a little while," but I could not convince her that I could make any headway with her teeth. She was discouraged. I could not say the dentist who had previously treated her teeth was incompetent, and I was the fellow who would do the great things! I could not tell her that. She had not accused me of dishonesty, yet everything I said to her was a mere collection of words and grammar which did not mean anything, which did not take any vital hold on her. Finally I said, "You are away off here, and I am away off there, and the only way to get together is to get together on a middle ground. Let us get down to a working agreement. If you do your part, I will do mine. If you will let me fix one tooth and you pay my bill, that is your part. My part is to fix the tooth just as well as I know how and charge you what I think it is worth." I decided to work upon the worst broken down molar she had, and she said, "Oh, don't throw your time away; fix one of my teeth that we have some hope for." I said to her, "You are going back on your agreement already." She said, "You can't fix that tooth so that it will last six months; that has been hopeless for ten years." I fixed that badly broken down molar tooth for her and charged her twenty dollars for it, and that was as much as she had ever paid for fixing any ten teeth in her mouth with amalgam up to that time. That was over three years ago. The patient was in my office yesterday, and she is a new woman in every way, and dentistry is a new profession in her mind in every way.

We do not want to occupy the position that we know everything; but what knowledge we have we are going to put at the service of our patients, or we are not going to put anything at their service. If we can do that, we can't make many mistakes. I believe that. If I have said anything to help my fellow men to have confidence in themselves and to serve their patients as they wish to serve them, I have accomplished what I rose to my feet to do.

Dr. J. D. Wilson, Danville:

Recently I had a case presented to me along the line of Dr. Baker's paper which I want to relate, but before doing so I wish to refer briefly to the English part of dentistry. I have recently had some cases presented to me where I noticed they used a great deal of German silver instead of gold for plates and crowns, especially partial plates.

The father and mother of the little patient whose case I am about to relate were both patients of mine. The little girl had been sickly all winter, and she was seven or eight years of age. Her mother fell and hurt herself, so that it was necessary to call in a physician, and while he was at the house seeing the mother they asked him to look at the little girl to see what was the matter with her. I do not know why, but he glanced in her mouth and said to the mother, you had better have her teeth fixed up. Probably that is what is the matter. Her teeth were decayed, particularly the temporary molars, although they did not look so very bad. However, I found three dead pulps. There were no abscesses. I opened them all up, cleansed them, and in about three or four days afterwards the father brought her back, and I asked him whether she was eating better, as previous to this she was eating very little. He replied, "She is now eating everything in sight."

Here was a case where the physician acted as friend, not only to the family, but to our profession. I believe it will be better for us to keep closer to the medical profession in a friendly, personal way, as well as in professional matters. We will win some of them over in that way.

About the fitting of gold crowns. I met another dentist, a young man, in a hotel, with a supply man who was there one day. I was buying some concave and convex grinding stones. He said, "What do you do with all of them?" I told him how I used them, that even then I could not reach all surfaces as I liked. He replied, "I never use them." He was a young man, younger than myself. I want to know what is the matter with the young men who are now graduating from our dental colleges when they do not know any better than that. Understand, I am not knocking any of the professors, but there is something the matter. It is not the old practitioner who has learned to do bridge work and crown work since he came out of a dental college who is doing the rotten business. They are dying off. Nearly all of them are dead now.

There is one physician in our town who told me a number of times about a dental convention he attended years ago in Missouri when he was practicing there. Some dentist read a paper before the convention which impressed him very deeply, and the thing he most strongly emphasized was, "The edges, gentlemen, the edges," and this German physician, every time he gets me in a crowd of his friends, will say, "The edges, gentlemen, the edges." That is what is the matter with us: we are not particular about the little things, or about anything we can cover up.

I object to Dr. Black's statement of our having too many patients. Dr. Black may have too many patients, but the average dentist throughout the country and in small towns has not enough patients. That is not what is the matter. The high sense of personal responsibility is lacking. But what has caused that I cannot say. It is either that men do not know any better or do not care to do any better, and if they do not know any better the fault is with the dental college. If they do not care to do any better, the Lord have mercy on them. These are the things that confront us. We do not have too many patients, I have seen the day when I scarcely had a minute to sit down, and I have seen other days when I had very little work to do. Every man who is practicing dentistry has seen the same thing.

Dr. S. C. Sims, Sterling:

There is one important point that has not been dwelt on as yet, and that is with regard to educating the public along the line of distinguishing between good and bad dental work in a mechanical way.

Last month I read a paper before our local society in Dixon, and the subject of the paper was, " A New Method of Eliminating the Advertising Dentist and at the Same Time Raising the Standard of Dentistry." A point brought out in that paper was the point mentioned by Dr. Baker along the line of educating the public in the mechanical part of dentistry. It seems to me, as I presented it, that if the laity were only educated, so that they could distinguish beween good and bad dental work, as the doctor has brought out with regard to crowns, it would make the road of the advertising or unscrupulous dentist pretty hard. He would have to come up to the standard of the laity along that line or get out of the profession.

Another thing in regard to raising the standards of dentistry. It seems to me that if the patients were discriminating and capable of distinguishing between good and bad dental work, it would be a new incentive to do good work, and not only a new incentive, but it would compel the dentist to do work that is good to hold his position in the dental profession.

My paper was read at Dixon and the point also brought out there, as a suggestion, that the state dental society take up this work of educating the public. I read the paper there as a feeler, as I was afraid to suggest reading it before the state dental society, because it was such a radical move I was afraid I would be sat upon. The paper was criticised severely and squelched pretty effectually by those who discussed it, who thought it was hardly an advisable move; but the paper of Dr. Baker makes me feel better, as I feel the points brought up were along the lines of those that I brought out. I feel more certain now than I did then, that the results that would accrue from raising the discriminating powers of the public in general in this line would be appreciated by the dental profession more, if possible, than by the laity, because if we raise the standard it would tend to correct those cases that have been mentioned by the essayist and the dentist would be compelled to do good work. If the patient had been educated by a society like the Illinois State Dental Society, whom they knew could not individually be benefited by any notoriety that might come from an educational effort, so that they could recognize that a crown put on so that it stands one-eighth of an inch from the tooth at the gum line, would be a detriment to the mouth, if they permitted to put it on. He would be compelled to do good work in order to hold his place in the dental profession. It seems to me that this is one of the most important factors in correcting this trouble. It would eliminate the advertising man because we know he depends upon the ignorance of the public to get his work. His main point is in advertising painless dentistry, and if the public knew it could not be painless dentistry if the work was done properly, such advertising men would not be patronized as much as they are today.

Dr. Edmund Noyes, Chicago:

Along the line of thought on which the gentleman has just spoken, I suppose that what he desires is a legitimate part of the field of the committee on public education who are preparing and publishing articles in the newspapers. There is an important distinction, in my mind, relating to this matter. It is very desirable and of very great value, I think, that the public should be instructed in respect to the difference between good and bad dentistry, and those particulars which make the difference between good and bad may be explained to a great degree, so that a great many people will comprehend something about what they are. But it is a hopeless thing to attempt or to expect that the public will be good judges of the goodness or the badness of the dentistry that is done for them. There is not one man in a hundred who can go into a tailor shop and tell by the looks of the cloth just how much shoddy there is in it, how much wool, or how much cotton, or how much silk there is in it, and be his own judge of the quality he is buying there. He has got to depend upon the character of the man he is buying it of, and next upon the relative price that is asked for it. The same thing is true if he goes into a jeweler's store and undertakes to buy jewels; he is depending upon the jewelry man from whom he buys it as to both the value and quality, and men who have dental work done are almost absolutely dependent upon the integrity and the judgment of the man whom they employ. But there are very important matters, the very ones which have been referred to this afternoon, which the public can be made to comprehend. They can be made to comprehend the difference between proper contact in a completed operation and a bad contact. They can be made to comprehend the difference between a smooth margin and an overlapping margin. They can be made to understand that chronic pus formations in the mouth are dangerous to life, and a good many other things they can be instructed in.

Dr. C. B. Warner, Urbana:

In this series of articles we are putting through, there are three or four that have reference to bad dentistry. One article I wished, had appeared in Hampton's Magazine, but my friend Dr. Johnson stopped it because it was a severe article, nevertheless it was a very good one. He supervised every article, his eyes caught that one and he stopped its publication.

Referring to the paper of Dr. Baker in general, I think the position of Dr. Hunter ill-advised, especially in referring to the entire dental profession. We are told that the dental profession has made wonderful strides. We must remember that our profession is only fifty or sixty years old; and when you go back to the condition teeth were in before that time, and look at the conditions of mouths today, it seems wonderful. No profession has done so much for humanity in so short a time as our profession. We ought to look at the question from both sides. It would be a good plan for some in the medical profession to clean house before they find fault with their neighbor's house. Let us examine the medical profession. You have three or four different schools of medicine, all clamoring among themselves, and quarrelling, and calling each other names. We do not have that in this profession. While it is a fact that everything in our profession is not as we would like to have it, still, at the same time, we are agreed on what ought to be done, and we try to do these things as well as we can. The doctor buries his mistakes, we have with us all the time our mistakes, so that we can see them.

The dentists in our city are fully as high, professionally, as the physicians. I do not see that the dentist makes any more mistakes than the physician. The dentist is as thorough, is as cultured, and stands as high in his profession as the physician. I think a sweeping criticism of that kind is ill-advised. I think the American dental profession ought to resent it. I think also, as Dr. Baker says, the word American should be resented also, because while there are some dentists on the continent and in England who may be better than some of our dentists, yet, there are a large number of them who have received their instruction in this country. If we take the great men in the medical profession and the great men in the dental profession, w can point with as much pride to our men as they can to theirs. They have no better men than we have. Take the researches of Miller or of Black, can they show anything better? Look at the work of Dr. Morton in introducing anesthesia. Look at the work of men of our own profession, particularly Barnum, who introduced the rubber dam, and the work of Dr. Taggart with reference to the cast gold-inlay.

We have new ideas in our profession every year. We have made, and are making, enormous strides. We cannot accomplish everything at once. No person can do that. We should look at the bright side of this thing. We should be proud of our record, and when we are assailed for what we are doing, we should resent it, and tell them exactly what we have done. We must not, however, be blind to the faults that are before us. We discover faults in the present system and at the present time in our contact-points and margins of crowns. A dozen years from now there will be other faults we will find. But we are making progress, and very good progress at that.

Dr. C. R. E. Koch, Chicago:

History seems to repeat itself. William Hunter is treating today pretty nearly in the same way the same thing that John Hunter did 140 years ago. John Hunter was the distinguished father of English dentistry. He was a great author and his writings were the early dental textbooks, in Great Britain, but he taught in his lectures that whenever a dentist encountered an abscess or anything of the sort that needed a surgical operation or treatment, he should call in a medical man to take care of it, because the dentist was incompetent to treat it. In reply to that statement the father of American dentistry, Horace Hayden, said it was ridiculous for any medical man at that time in the history of the world to announce such a doctrine; that if John Hunter had taken the pains to look across the channel he would have found Frenchmen who could take care of all of the diseases of the oral cavity.

The young man who preceded me spoke about publicity and of educating the public. This society has been at work educating the public from its beginning. We are a little bit hypocritical, the dental as well as the medical profession. We profess to abhor the idea of newspaper publicity, and then whenever we get into a little corner we cry for it. Both professions want that publicity, yet at the same time they desire that somebody else should pay for it. That is the proposition, and they are both alike, the medical and dental professions, and here comes an important point: what do the newspaper men think of us? They also consider themselves a profession. They have their ethics, and their ethics is built upon the idea to give nothing that is not paid for. In the rural districts, in the smaller communities, I believe the dental profession and the medical profession should stop all of this pernicious quack advertising. The advertising that is given by the dental parlors and by the quacks in medicine. The quacks and dental parlors are comparatively few. On the other hand, the reputable practitioners of dentistry and medicine are many. If the honorable practitioners would care to put a plain card stating their office hours, etc., in the local newspapers, and all agree to do it with the understanding that the advertisements of quacks and dental parlors shall be cut out, I believe the newspapers could be persuaded by self interest if no higher cause to not accept advertisements from quacks and the dental parlors because the other fellows would give them more money in the end. It seems to me, this is a phase of the subject well worth investigating. I believe it can be done even in Chicago. Of course, cards in the newspapers in Chicago would not be of much value to the individual advertisers, but if the press could be made to understand the object and that space is to be paid for by respectable men. with the understanding that the other fellows were not to have use of it, I believe it could be done, and dentistry would get all the publicity in that way that was necessary to educate the people, and you would pay for what you are getting. This would be a means of reaching that question that could be made effective, but here is the other proposition: to educate the public through the public press. I did not intend to touch upon it, and it is not germane to the question under discussion, but I will say a word or two. The Metropolitan Press of the cities is conducted on a different basis from that of the smaller communities. One department of the paper knows nothing about what is done by another. In the smaller towns newspapers are personally conducted affairs. In the great cities they are corporations that know nobody. The departments of the paper itself are not in constant co-operation. One department looks after the matter of news; another department looks after the matter of advertising, and another department after the policy of the paper, political and so forth. The only way these papers can be reached is through the advertising department, and there is no generosity about it, it is simply business. It costs so much per line. When you go to the papers and say, Gentlemen, here is a matter of public education, and the newspapers are the public educators, here is a line of articles already prepared, that have been used somewhere else (and if that is an objection they can be re-written, so that it will be original matter practically for you people), they will say, Yes, that is very good, but is there not a sinister motive? You say, No—absolutely no. It is all altruistic. Well, they say, that may be so, but it does not seem so to us. They may ask you the question, What will result from this publicity? Greater benefit to the public. Yes. Will it not result in a greater demand for dental service? Yes, incidentally. If the dentist is going to get the benefit, why should he not pay for it? You see, there are difficulties in the way of getting this sort of publicity which you want, and it lies simply in the fact that the newspapers, and the magazines are run essentially upon a business basis, and the dollar and cent side is ever uppermost. A great deal has been done and is being done, notwithstanding these conditions. But I want to assure the young man who has just spoken that that kind of publicity is being carried on, but not to the extent it should be or we hope it may be sometime soon.

Dr. G. D. Sitherwood, Bloomington:

I am glad Dr. Baker quoted from the paper of Dr. Hunter which has created such a stir in the dental profession. We get a very high opinion of ourselves. You know somewhere we read, "Beware when all men speak well of you." It will not do any harm to have a little criticism of this kind. When you go home, look at the crowns and bridges that come into your office, made by the other fellow. Look at the margins, and the next time you are at some social function and are talking to a friend who has a good deal of crown and bridge work in his or her mouth; notice the odor of his breath or her breath. So, I imagine, this paper will do good. It is said of Mark Twain that a rumor went abroad that he was dead. His reply was, upon being informed of it, that "the report was exaggerated," so I think this criticism is exaggerated, but I believe it will do good.

I would like to emphasize one other point: when you go home think of the number of cases of alveolar abscesses that are not cured. Think of extractng those teeth. If they are cases of pyorrhea, cases of loose teeth with pus forming about them and cannot be cured it may become necessary to extract the teeth to have a healthy oral cavity.

I wish to thank Dr. Baker personally for his valuable and instructive paper.

Dr. Baker (closing the discussion):

I did not mean in my paper to offer any criticisms of the dentist. I have no criticism to make. I simply quoted from these articles which have been already published and called attention to the possible results which might follow the publication of these articles.

(Dr. Baker's prophesy has already been fulfilled by the appearance of a very yellow, popular article, discrediting many members of the dental profession, which appeared in Pearson's magazine for July, 1912.—Ed.)

As to how conditions of bodily disease can be recognized by the mouth, what the dentist will do, that brings up another subject entirely. But it gives me an opportunity to say that you have all had experience with some patient whose gums were congested and bleeding, and he would go away for a vacation and come back in a week or two and his gums would look like those of another person. That was the result of a little change and recreation and a better physical condition.

Within two or three weeks I noticed an article in the Journal of the American Medical Association, about the diagnosis of incipient conditions of disease. The author of this article said a patient would go to his doctor and complain of being languid, and not feeling right, and the doctor would say, "Oh, well, you need a tonic." He gives him a tonic, when probably that was a case of incipient tuberculosis, and what the patient needed was a good, thorough diagnosis, not a tonic. His visit to that doctor probably did more harm than good, because it led the patient to think there was nothing much the matter with him, when in reality he needed serious attention. Doctors have been giving a good deal of attention to public hygiene and to preventive medicine on a large scale. But to the question of preventive measures applied to the individual they have given very little or no attention, and it is suggested that they begin to educate patients to come to them periodically to be examined to see whether or not there is anything wrong with them. The same thing applies to you who are engaged in the practice of dentistry. That article is the first indication of the coming method of handling disease, namely, the preliminary diagnosis of disease. That thing is going to grow. Five years from now physicians will increase their business by having all patients come to them at periods of six months or so, to be looked over carefully. There is your chance. There is the natural field for dentistry. These conditions of slight preliminary disease often show in the tissues of the mouth, and in the saliva, when there is as yet little indication elsewhere in the body. The physician does not know very much about the mouth and about the conditions of the teeth. He ought to know more, and he will probably begin to look into it, as the result of those articles which I have quoted on the dangers of bad dentistry. There is a field here if the dentist wishes to enter into it and do something. It is open to him.

DISCUSSION OF DR. BENTLEY'S PAPER ON "A SURVEY OF ORAL HYGIENE."

The discussion of Dr. Bently's paper was opened by Mr. J. J. O'Connor, who was superintendent of the Stockyards district of the Associated Charities and largely responsible for the establishment and maintenance of the Dental Clinic at the Stockyards Settlement. His discussion was written and therefore the stenographer took no notes. The manuscript was not given to the secretary or editor, and was afterwards lost. Mr. O'Connor was requested to rewrite it, but did not find time to do so.

Dr. Edmund Noyes, Chicago:

I have not the knowledge with respect to this matter that entitles me to speak. I have an interest in it, and an enthusiastic approval and hopefulness in regard to it and what will come of it. It seems to me that the paper and discussion have been most admirable, and have put forward the considerations which are most necessary and have indicated the safeguards and indications which must be carefully heeded. I am very glad, indeed, that the dental profession is waking up to its social and public responsibilities. I do not think we are strangers to the sentiment of charity and of good will and of social service. I do not believe there is one of us here who does not in his private practice, continually, as opportunity offers, minister to the necessities of people who cannot pay him adequately, and for that very reason we are in a frame of mind and the habit of life which fits us and makes it natural and easy for us to undertake such an enterprise as this. I might go still further and say that in motive and spirit and ethics professional life is distinct from business life, in forcing us into such enterprises as this, for a professional man fundamentally by his very position as a professional man is thinking about the welfare of others and not primarily about his own welfare. I do not mean to say that we do not care whether we get any money or not, or whether we have the means with which to educate our children and provide for our old age. I do not mean that. But every patient that comes into our hands comes because he trusts us and expects that we will consider primarily what is good for him, and secondarily what is needful for ourselves, and so the whole attitude and spirit of professional life is favorable to all these enterprises and furnishes a strong ground for hope that we shall not prove wanting in this new set of responsibilities and duties that are coming upon us.

I wish I were closely enough acquainted with the details of such work to extend and amplify what has already been said, but perhaps there is no need. (Applause.)

Dr. C. M. Meade, Carmi:

I would feel I was doing myself an injustice and I know I would be doing my community a sad wrong should I let this opportunity pass without thanking Dr. Bentley and all of the workers that have done so much in this special line, not alone in Chicago, but especially in the community where I live.

The question which confronts us is, are we doing all that we ought to do, and are we doing it as rapidly as it should be done? Some of our most able and intelligent men have stood on this floor since this meeting opened and said that we should be careful and not go too fast. I agree with them. I agree that every dentist should be capable, and be fully abreast of the times before he tries to teach the public in his community. But in view of all those facts, I do not think we are going too fast. I do think, that we have been going entirely too slow for a number of years in this particular line. I have been practicing dentistry about seventeen years, and I have urged these methods of educating the laity because of the teaching I had in the college I graduated from; and the deep convictions I felt of the good that would follow. I urged it in our community, and in the dental society when I had an opportunity, and cold water was always dashed upon it by men who were decidedly more eminent and capable than I was. This propaganda was proposed not only in the profession but to our school boards and other sources in which the work might be advanced. Having received at this time so little encouragement and seeing it impossible to accomplish any thing successfully without more cooperation than I could enlist, the work was dropped.

The only encouragement received at that time was offered by the superintendent of schools. The dental profession, and the public in our community was not ready to help advance such a movement. This made me feel that I was trying to push the work faster than the people and the dental profession were willing to have it pushed.

The question that confronts us in regard to our existing form of government, especially in school work is this: Is it correct? Blackstone tells us that the function of government is to help us and to teach us to live right, and to make it easy to live right and hard and difficult to live wrong. The question to my mind is, are we living right? Is our present form of government, especially in regard to our schools, right? I think that it is not right in this particular line. We are devoting time and money to the education of the mind, and decidedly more to that than any other part, and statistics prove beyond question of doubt that we must have a healthy body before we can have a well developed mind and morals with it.

Take our charitable and penal institutions. Are we spending our money in this great state and in other states of these United States in the right way? I say not. If the amount of money and effort that is expended upon charitable and penal institutions was reversed, using the same amount of money and effort to educate those same inmates in early childhood in the right way, so much of this money and effort that is practically and positively useless, and thrown away, will revert back in a way that will be a credit to our nation and to our state.

I am told, and I think it is correct, that the City of Chicago last year lost three hundred thousand dollars, money thrown away, because the children had to be out of school on account of bad teeth and illness from various physical defects. Ladies and gentlemen, is that economy? I say not. I say there are ways and means, and the dental profession should be one of the most potent factors to help bring about the ways and means to prevent such a waste of money. In our own little town the superintendent of our schools went over the records with me about three weeks ago and we found that $749 in a town of three thousand inhabitants was wasted last year. We have not exact records as to whether all that could have been prevented, but we have records to show that a great per cent of the money could have been saved to our little city. This winter, through the superintendent of our schools, and the county superintendent, we are going to try to see how much of this money can be saved. All that Dr. Bentley has said in regard to the work of the laity is very true. It is wonderful and really amazing to see how interested the laymen are along these lines, and how much help they will give us if we go at this matter in the right way. This dental society, before this session closes, should take up a line of work they have never taken up before, and that is more field work among the laymen. We have men who are doing a wonderful work, but they are too far away in many instances, from the field where the work must be done. They cannot come in contact with many of these conditions. It will take years, with the present system, to get certain conditions eliminated, and the best way to do this is to inaugurate more field work.

I want to thank Dr. Bentley and Mr. O'Connor, whose remarks are so timely and beneficial to the members of this society.

Dr. J. P. Buckley, Chicago:

I would have missed a great deal if I had not heard this paper by Dr. Bentley, and also the discussion by Mr. O'Connor.

One of the keynotes of Dr. Bentley's paper was caution, and I want to correct a statement that was made by the last speaker. Much injury can be done in this campaign as well as any other by not stating the facts, and while I fully realize that Dr. Mead did not intentionally make a misstatement, I would not like what he stated to appear uncorrected in the transactions of this society, namely, that last year it cost the city of Chicago three hundred thousand dollars because of dental diseases in the mouths of the school children of our city. That statement has been brought about from this fact: an investigator connected with the Russell Sage Foundation, New York, stated that in his opinion two aching teeth, causing absence from school or aberration of thought while in school would delay a child six months in the completion of his elementary education. There were in Chicago in the grade schools 8,549 pupils who failed to make their grades last year, and it cost us $34.40 to educate a child. It cost us, therefore, in the City of Chicago last year, not three hundred thousand dollars, but $294,085.60, because these children failed to make their grades, but they did not fail to make their grades so far as we know because of bad teeth. We have found in our investigations and examinations of the mouths of school children of Chicago that ninety-five per cent have carious teeth or some other lesions of the mouth. Knowing that, it is reasonable to suppose that probably a large percent of the number of children that failed to make their grades in Chicago last year failed because of bad mouth conditions. But I do not want the statement made here as a supposed fact that all of those children failed to make their grades because of bad teeth, because we do not know how many of the number failed because of bad mouth conditions, and I rise, Mr. Chairman, for the purpose of correcting what may seem to be a misstatement.

Dr. Edmund Noyes, Chicago:

I am very glad Dr. Buckley has said what he did, and it means the same thing as the question which I asked a day or two ago, namely, that it would be enlightening if we could have a close examination of these cases, and know how many of these children failed to make their grades on account of mouth conditions, how many failed because they lost school time from the measles, scarlet fever, whooping cough, diphtheria, or from general unhealthy conditions in which they live. All these are causes that must be considered to have their influence in the failure of children to make their grades. We must not claim everything for the teeth, and I am very glad, indeed, Dr. Buckley put the case in that way.

Dr. Mead:

I am very glad this point was brought up, but the estimate comes from a Chicago man.

Dr. J. D. Wilson, Danville:

Dr. Bentley advises us to go slow. Dr. Buckley seconds the motion, and we all sit still and say amen—because we are in the church. Who is going to start the thing? That is what I want to know. It seems to me that the dentists in Chicago know their business and know their conditions and surroundings. The dentists in Springfield know theirs, and it is pretty nearly up to the dentists of every community to solve their own problems. I said in our own local society that very thing, and I agree with the remarks of the former speaker who spoke about more field work and said that we should loosen up a little bit. For instance, let the men from Springfield go over to Decatur and say something to the laymen that they would listen to. The people of Decatur would listen to a speech from men from Springfield whereas they would not do so from men from their own town. We must loosen up and get busy.

Dr. G. M. Brunson, Joliet:

In my own city the examination of school children's teeth has not been a success. There is one point that has not been brought out, and that is why I rise to speak of it. We have no adequate legislation to control this subject. The subject of examination of school children's teeth is so recent that our present statutes do not cover it. There is no absolute authority to do so, and I present this thought for your consideration, namely: The examination of school children's teeth is one of the grandest steps we have ever taken for humanity's sake. The dentists should use their influence with the laity. It is a matter of education. People are very selfish and suspicious when we try to start this movement in our home communities. They think we are after business. Many of them cannot take a more humanitarian view of the subject. There is not a practitioner here but what would like to have these patients come to his office earlier so that he can treat them with greater satisfaction to the patients and to himself. It is a very hard matter to educate the general masses of the people with regard to the care of the teeth. The children, when they reach the age of six, and begin to attend school, ninety-nine times out of a hundred need the attention of a dentist, but the general impression among the masses is that the teeth do not need attention until they begin to ache. They need attention *before* they ache. We all know what the loss of the sixth year molar is to people in after life in the struggle for bread and money, and many children are seriously handicapped for the rest of their days.

I throw out this thought, so that the dentists present, may use their influence with a view to securing proper legislation along this line.

Dr. Don M. Gallie, Chicago:

I did not feel like carrying on or continuing this discussion following the splendid paper of Dr. Bentley and the remarks by Mr. O'Connor, but after listening to the remarks of some of the other gentlemen I feel that this subject, if allowed to pass at this time, would be done an injustice by considering practically only one phase of it. Some seem to have the idea that we must examine the teeth of the school children and that this is the principal thing. Dr. Bentley, in his paper, dealt with something greater and broader than simply the examination of the teeth of children. It is a great oral hygiene movement, one of the great uplift and onward movements looking towards the betterment of the people of today. After listening to the remarks of Mr. O'Connor and the manner in which he has presented the question, and the far-reaching influence of this phase of public uplift work, I am sure it will stimulate in the heart and desire of every one here a determination to go back and do something, and yet the question is, After you leave this meeting with that enthusiasm and determination, will it ooze out and will you go back into the old slipshod way and not help to carry this burden? There is something more than the examination of teeth. We must start before that. We must get the parents, the adults, interested, and I know of no better means of reaching the people than through the clubs, and similar organizations. Today the great institution in this country is the mother's club. It used to be considered an organization composed largely of faddists and of people who neglected their homes, and that it was this class of people who were prominent in women's club work. Today, if we consider any advance in uplift work, we will find it is the women who are doing things and who are benefiting humanity. So we should not only do our work in the schools, but we should get in touch with the mothers. The public service commission appointed last year, which has done such splendid work, is working along this line, and there are many different ways we can carry on this work. Let no opportunity pass without our being present at educational gatherings. Every educator is most anxious to assist in carrying on this work.

Previous to a year ago in preparing an address for this society, I corresponded with the health officials of every city of this country of thirty-five thousand inhabitants or over. It was gratifying to learn that such a large percentage were in favor of this great movement, and those who were not, expressed a desire to get suggestions from the dental profession how to carry on the work. You can hardly pick up a dental journal or paper from the north or the south, the west or the east that does not speak of this advance movement going on throughout every section of the country, and so it is up to every man here, when he goes back to his community, to start in with this work. But I apprehend that all of you will not do it. When this movement was first started in Chicago and was presented to the Chicago Dental Society, it appeared that every man was tumbling over the other in an eager desire to get busy and to carry it on; but when we perfected the organization and planned the work and called for volunteers to examine the teeth of the children in the schools of Chicago, we were unable to get more than ten per cent of the number necessary to carry on the work. Why did we not succeed in getting a sufficient number to go out and examine the teeth and mouths of the children in every school in Chicago? Notwithstanding the 1,700 or 2,000 dentists we have in the City of Chicago, we were unable to get over fifty that would give the time and one-half day a week to carry on this work. Of the gentlemen who volunteered to give a little time to the examination and care of the mouths of the children in one of the largest schools in Chicago, Dr. West, who is here tonight, was the only man who showed up. He was there for weeks not only spending one-half day, but a good deal more than this, because others would not do their duty. There are many here tonight who will nod their heads and applaud, but what we want is men who will deliver the goods. Actions speak louder than words. It is a question that is up to us. The great State of Illinois is well under way in this movement, but we are behind some of the other states. We are far better organized than New York and many other sections, and it behooves every man and every women to assume their share of the work and not sit back and let the other fellow do it. (Applause.)

Dr. Bentley (closing the discussion):

I am exceedingly grateful to the gentlemen who have been so very courteous to me with reference to my paper. I am likewise grateful to Mr. O'Connor who comes here at his own expense, not only to discuss my paper, but to give you a splendid array of consecutive facts and arranged ideas with reference to what social service really means. Mr. O'Connor, to me, is a very valuable asset to this work. It was Mr. O'Connor who was my chief aid in the dental section of that tremendous show, the Child's Welfare Exhibit. It was visited by seven hundred thousand people. I experienced a little disappointment in not having that phase of the paper discussed that I considered the central thought in it, namely, the practicability of this work being placed upon a permanent basis and the means by which that can be done. That is a far off thought, and yet it is one that I believe can be carried out in so far as we do our full duty. Now, in doing that, we must realize that it must be done intelligently. It must be done through processes of accumulated experiences, and it is for that reason I had Mr. O'Connor to speak to you. In other words, ladies and gentlemen, we are upon the threshold of a philanthropic movement, the like of which we have never yet had any experience with. Our culture has been that of individual development or development of a group. We have never been tutored, we have never been in any way informed how to go methodically, intelligently and systematically toward helping our neighbor. As Dr. Noyes said, we are all familiar with charitable work and philanthropic work—yes, we all do that in our offices. We have done it a great many times, but those are primordial efforts. What we are to deal with now in an organized way is social service work, and social service is a science. The technic of social service is as scientific as that of making the gold inlay or of making any other piece of work with which we are familiar. In other words, preparation for the social service worker is as important and is as necessary as the technic to become a dentist. We are about to enter upon the threshold of a philanthropic work that of necessity involves social service intelligence and knowledge and technic and in order to do that gentlemen, we must become at least familiar with the *rudimentary* principles of this science of social service. We are going to do it for this opportunity that confronts the profession transcends in importance any opportunity that it has ever had in its history. It may not be the older men, who will become the competents in the work, but it is going to be the younger men, and it is my earnest plea to the young man that if he is at all impressionable, if he has been fired by any phase of this work, to let this sink deeply into his consciousness, that this work itself shall be resident with him and not with the older man. Some of the older men may be able to counsel and guide, but the real hard work to be done in the years to come must be done by the young men who are in the profession today, and by some of the young men who are in this room tonight, and in order to deal with the many sides of this question they must be familiar with the fundamentals of social service technic, and I plead with the young men who are dentists to associate themselves with the social service workers,—and there are social service workers in nearly every community today,—in order that they may be better prepared to carry on this work, which will be the legacy we will leave you. That is the reason I mentioned caution. If you were to go through the mass of correspondence I have carried on incident to this paper, you would be impressed, as I was, with the one note that in nearly every community where this work has been inaugurated there are men who are illy balanced who rush into this thing for possible personal preferment, and if we do not look out they will wreck the cause unless they are held in check. This is really serious work, and that is the reason I advised caution. If we are not cautious we will wreck it.

With reference to the remarks made by Dr. Brunson that this movement cannot be carried on because there is not sufficient legislation in regard to it, I will say that legislation follows the quickening of public conscience. If you men in your town, Dr. Brunson, and others, do not find a responsive public sentiment to this demand that is almost world-wide, the cause lies nearer you than the people. It is resident with you to arouse the public conscience and the public sentiment to a point that they will see the economic necessity, the humanitarian necessity of having this thing is done. Then legislation will follow, and not until then. So, in those communities where there is no response to public sentiment, it is not so much the fault of the public as it is the fault of the resident dentists. I simply say to you that this work is tremendous. It needs caution. It needs a social service worker, and it ultimately needs all these forces combined to place it where it will not be a fugitive movement, but a permanent one, either municipal or state. The very thing Dr. Gallie complains of, you will find others complain of in every community, but I feel that we will make greater progress than we have done in the past.

I have been engaged in this work for fifteen years. Fifteen years ago I was chairman of the Odontographic Society committee, that carried on an investigation, in this and other countries, and I have been engaged in it since that time. I am proud to be considered the one who through this investigation called the attention of the profession of this country to its needs. The men who have been in this movement and who have been earnest and self-sacrificing in their work, see dangers ahead, and I trust some of the dangers we have indicated to you will be averted by the things that have been said by Mr. O'Connor and the other speakers. (Applause.)

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EDITORIAL.

THE LOCAL SOCIETY.

We have our state organizations, our national organizations and our international organizations, and all are extremely useful in their way. We need these representative bodies to direct the administrative destinies of the profession, and to give it a status before the world. Without them we would have little standing as an organized profession in the eyes of the people. And yet the really significant work in the scientific and practical development of dentistry is seldom done by these large bodies, but by other organizations over which there is very little heralding of trumpets. It is the local society which after all does the greatest good. Its benefits are concrete and direct, and its influence more quickly reaches the people in the form of improved service than does that of any of the larger societies.

It is in the local society where most of the new timber is tried out, and where the younger men in the profession are developed. Many a young man, too timid to appear before a state or national body, has received his first impetus to take an active part in society work by attendance on the local body. It is here that he meets men whom he knows, and with whom he can work with less restraint than with those of the larger organizations. There is not so much of the apparent aloofness and more of the personal contact in local societies than elsewhere, and more detailed and direct knowledge to be gained.

Most of our state organizations now have component societies which are made up of local men in their respective districts. These societies meet every month or every two months during the year, and they are the societies which are doing the really significant work in advancing better dentistry throughout the state. The officers of the parent society in the state should foster these local branches in every possible way, and should nurse the membership most carefully. There should be the closest community of interest between the two, and the fact should never be ignored by the state society that the local organizations are the bone and sinew of the parent body. On their part the officers of the component societies should be impressed with the fact that practically everything depends on them, and that the record they make will redound to the credit or otherwise of the entire organization. They should feel that they have an interest and a responsibility extending beyond their immediate society, and that everything they do will be noted either for or against the reputation of dentistry in their state. In these days of acute activity in the profession nothing is without significance, but of all the factors influencing the progress of events the local society must be accounted as among the most important.

DR. J. P. ROOT.

In our October issue was a brief obituary notice taken from the Chicago *Daily News,* announcing the death of our good friend—everybody's friend—Dr. J. P. Root of Kansas City. It is seldom that the dental profession is called upon to receive so profound a shock as that occasioned by the death of Dr. Root. He had only reached middle life—was in fact fifty years old—and had so much of future possibility before him, a possibility which his present commanding position in the profession would seem to assure of fulfillment, that his taking away was a distinct loss. He was one of the most progressive men in the dental profession, and when the records are fully written of the advancement of dentistry in the particular region where he lived and labored it will be found that the name of Dr. Root stands well among the foremost. He was never neutral on any question for the sake of policy, and yet he had the rare quality of being able to differ with a man most strenuously and still love him.

He was big-hearted beyond estimate, and filled full the measure of a rare companionship. He never did a base or under-handed thing to any man—first because he did not know how, and second because he would not have done it if he had known how. There was not in his nature a trace of smallness or meanness, and he despised the atmosphere of prudishness or insincerity. It was his rare gift to laugh while others frowned, and then again to laugh while others laughed. His was a sunny, cheery, optimistic nature—a nature greatly needed in an age where stress and strain take much from the lighter side of human life.

Dr. Root was a distinct factor in the development of dentistry, and in his unique and loving personality he left a legacy to his friends which shall live in their hearts even longer than the memory of that which he did for the profession. The chief loss will fall upon his immediate family, and at this time, when the shadow of their bereavement falls so heavily upon them, their chief solace must come from the fact that he left behind the record of loving deeds and loyal service, and that the world is better for his having lived therein. And this after all is the greatest that can be said of any man.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS.

ANOTHER VACATION STORY.

(Continued from the October issue.)

We were all tenderfeet so far as an ocean voyage was concerned, not one of us having taken a trip like this before. It was the same old party who had spent our vacations together for so many years and the personnel of which most of my readers are already familiar with. The reason I have not before mentioned the "Mater" and the "Indian Girl" and the "Collector," is because I had an embargo placed on me when it became known that I was to write up this trip. "Now," said the Mater, "I want none of your nonsensical references to me in those articles. I wish to have a vacation in peace for once." As for my Indian Girl and the Collector—heaven bless their hearts—they smiled a noncommittal and indulgent smile much as to say that whatever I elected to do was all right any way, though I am quite sure they have never courted the kind of notoriety I have given them in my vacation stories. But to write of this present trip without mentioning them all is out of the question, and I am going to give myself more or less of a free hand and take the consequences. I cannot any more than be killed any how, and after a trip such as we had a man should be willing to die if necessary.

"I wonder to gracious if this boat has bed bugs!" said the Mater, the first night out. Here was the cleanest, tidiest and trimmest ship imaginable, but bed bugs are the Mater's bête noire, as I am sure they are of every thrifty housewife. "Do they for a moment think those port holes are large enough for any of us to crawl through in case of trouble?" was her next comment. "We are to have no trouble," I said. These two things off her mind she settled down with the rest of us to the utmost enjoyment of the voyage. We had a rain the day we left Vancouver and we found that it had laid the dust all the way across the Pacific. Really such relief from dirt and smoke was a new experience to us. And the air—what a tonic for the muscles and nerves, and what a sedative for sleep. The salt mist on one's cheeks tones the skin to a velvety softness, and the cleanliness of everything makes life worth living to those who are accustomed to the smoke and grime of a big city. And the luxury of it all, waited on hand and foot and never a downtown office to think of. "Bawth's ready, sir," the next morning at my door, and it was my first real salt water bath. I fear I wasted a great deal of good soap trying to make a lather, but after having salt water baths for some months I doubt if I shall ever again be reconciled to the insipid fresh water bathing.

There were only two things on board with which I was not in perfect harmony, and I could not reform either of them, so I was obliged to accept them. One was the fact that there were other human beings on that boat just as good as I, but from whom I was irrevocably separated by the caste barrier of first, second and third class passengers. I know it is so on every boat, I know it is so the world over, and I am told that it must be so by men who know more about it than I do, but in the language of the Pike County Ballads "It gravels me like the devil" to feel that I am to be petted and pampered by fate while others as deserving as I am have presumably by the same fate been condemned to the ignominy of a lower status in life. And I do not understand it, and I hope I shall never be reconciled to it. I was not made for a man who could run a ship, but "by the eternal" if I did run one every man, woman or child on it who was clean and decent could have access to every part of that boat as long as they behaved themselves. And if they didn't behave, but got drunk and disorderly and made a nuisance of themselves—an accomplishment not limited to the second and third class passengers, by the way—down in the hold they would go till they knew enough to be decent. None of that grouping for me, none of that caste distinction typified by that passageway with its gate, practically shutting off one section of the ship from another, and saying in substance, "Thus far and no farther." When I looked across that hatchway at times and saw those people—some of them clean, tidy and perfectly respectable—and then reflected that I was not permitted to associate with them or they with me I had an almost uncontrollable desire to yell to them, "For God's sake come over here and take my place for a while and let me take yours—I'll trade with you willingly to let you taste the sweets of perfect freedom." But I knew it would be foolish to do that, it would be impracticable, it might even be wrong and do more harm than good. So I minded my own business and let the ship's company conduct its affairs as it saw fit. I suppose I would make a pretty mess of it trying to run a ship anyhow, but no ship's company can prevent me from thinking about these things. I later had occasion to see some of these people and to get acquainted with them. I found that I was permitted to go over to the second or third class, and I made it a point to go every day and visit with some of them. I met one man whom I shall always be proud to call my friend, and if he had not been traveling second I should be glad to mention his name. But no man likes to have it advertised that he is not traveling first class. Some of the third class entertained us with music the equal of which we could not muster among the first passengers, and yet in the tropics I saw some of those poor devils hauling out their mattresses and sleeping on the decks, rather than to tackle their hot cabins. I do not wish to leave the impression that the company does not furnish good quarters for second or third class passengers, but merely that the idea of caste is repellant to me.

The other matter which grated a bit on my nerves for a time was this: The waiters and other help about the boat were Britishers or Colonials and they make the best servants in the world. They are trained in it as a profession and the proverbial "Jimes" is known everywhere as typically ideal of his class. These waiters on the boat—they call them dining stewards—were the very essence of politeness and that was delightful and proper. I like that. But they went one step farther and then I had to draw the line. They were not only polite but they were subservient—almost cringing—and I abominate that. I never gave our boy an order that he didn't say "Thenk-you"—jerking it out as contritely as if he were grateful that I was letting him live. If I said I would like a chop he said, "Thenk-you." If I said I did not want one he said "Thenk you." If I wanted my coffee weak he said, "Thenk you." If I wanted to be let alone he said, "Thenk you.' The only variation he made in this repertoire was an occasional "Thenk-you-*sir*." I said to my girls, "I believe if I should hit that boy a bat on the head he would say, 'Thenk-you,' from sheer force of habit."

One day I did some trifling service for the Mater and she unthinkingly said, "Thank-you." I turned on her like a tiger. "If you say that to me again I shall apply for divorce the moment we touch shore," I exclaimed. "Ha ha," she laughed. "You can't get a divorce in New Zealand, you can't get it in Australia, and I don't think you can get it in the Cannibal Islands. By the time you get back home again, dear, you'll forget all about it." And so I did. But I do not believe that "Thank-you" will ever have the same beautiful significance to me that it has always had in the past. You can overwork a good thing till you kill it. (Later: I have capitulated. They may say "Thank you" to me all they wish. Three steady months of that inoculates a man and I have actually grown to enjoy it. I rather like to be thanked now for doing anything—whether I do it or not.)

I found I was in for some other trials on that ship for which I had not bargained. I found that they "dressed for dinner." Of course, I had not supposed that they went to dinner exactly without dressing, particularly as we had not yet approached tropical territory, but what I mean is that I couldn't imagine them putting on their Tuxedos and all the other tomfoolery every blessed night for dinner. But they did. The second day out my three girls sprung a conspiracy on me. They said: "Now, Papa, you must put on your Tuxedo for dinner tonight." "Nixy on that!" I exclaimed, backing up in a corner. "I came on this boat for the express purpose of having a good time, and you can't ring in any such insufferable nonsense as that on me. I want to be let alone to enjoy myself for once. The idea of tagging a man around with a short-tailed Tuxedo when he is off on a vacation. You may dress all you please, but I'll be gee dinged if I budge out of this common sense suit I have on." Oh, I talked up real spunky and grand, but I knew in my heart it was only a bluff—I knew how it would all end. That night, of course, with the other slaves I minced my way into my meal in patent leathers and the proverbial evening dress. And the most depressing and humiliating thing about it was that I really seemed to enjoy it. First thing I knew I was proud as Lucifer. When the Mater remarked, "Now you look something like the thing," I stuck out my chest like a pouter pigeon and swaggered around as if I owned the boat.

Those who know me would never suspect that in any sense I was at all like Abraham Lincoln. I have never been accused of resembling him in the slightest particular, but I am about to announce to an epectant world that Abraham Lincoln and I have one thing in common. When Lincoln was President a man came to him with the request to have some favor granted him by the government. Lincoln listened patiently to his appeal, and then said: "Well, I don't know. I'll see what can be done. But"—he added in a droll, quizzical way—"you see, I haven't much influence with this administration." That's the way with me. When those girls of mine set out on a given policy I don't seem to have much influence with the administration.

The first part of the voyage out the weather was cold. The winds from Alaska chilled the air and made our steamer rugs work over time. "Isn't there a warm spot anywhere on this boat?" asked the Mater of one of the stewards. He smiled and said: "Madam, it won't be long before you will be asking, "Isn't there a cool place on this boat?"

In spite of the bitter cold in the morning the deck hands washed down the decks in bare feet, and they didn't seem to know it. I always liked to be up nosing around in the early morning watching the men put the ship in order, and in this way I gained some rare bits of information. I found mostly that—confidentially—the superior officers running a boat really didn't know much about it, that if these same deck hands had only been promoted and given charge of the ship things would be vastly different. And, from my estimate of the average intelligence of the deck hand, I imagine they would.

Our Steamer Rugs Worked Overtime.

I had an awful time with my diary. I never attempted to keep one before for lack of time, but now I had more time than anything else, and so I concluded to put it in keeping a comprehensive diary. But I found the task of writing up that diary every night quite onerous. At the risk of wearying my readers with the many details of this diary I am tempted to reproduce a few entries.

Wednesday, June 12, 1912. Sailed at 3 P. M. from Vancouver. Called at Victoria at 7. Don't know what time we sailed—was asleep.

Thursday, June 13. Sailed all day. Fine bracing air—quite chilly.

Friday, June 14. Sailed some more—saw a huge animal in the sea which I learned was a whale.

Saturday, June 15. Sailed some more—slightly warmer, though not much.

Sunday, June 16. Sailed some more—still warmer. Saw flying fish. Divine service in the dining room. Went to sleep during service. Don't know whether or not I snored, but am willing to wager that I didn't—otherwise Mater would have surreptitiously punched me.

Monday, June 17. Still sailing. This boat is a wonder—hasn't missed a stroke since we left Victoria ages and ages ago. No other machinery would stand it. Raining this morning. Seems a foolish waste of energy—they are not in need of rain in this section of the country. Dance on the upper deck tonight, D. V.

These few random pages will show the intense application I gave to my diary. I came away for a rest and to escape work, but

C. N. J.

(To be continued.)

BOOK REVIEWS.

Dental Laws Condensed. A brief guide to the Requirements of Dental Examiners from Applicants for a License to practice Dentistry in the United States of America and Island Possessions, Canada and the Provinces, also the Leading Civilized Countries Throughout the World. Library edition, quarter morocco, $1.50 net. By Alphonso Irwin, D. D. S., Camden, N. J., 1912.

Dr. Irwin has placed the dental profession under great obligation to him by compiling this matter. It is the first attempt to do this in a systematic way, and the book will prove of great service not only to students in colleges who wish to learn the requirements of the different countries but to practitioners who contemplate moving from one place to another. Dr. Irwin does not claim that the information he gives is complete or perfect, but everyone must agree that it is the most comprehensive presentation of the subject ever made, and that while laws and requirements may change from time to time this work is at least up to date at the present time.

A Manual of Chemistry. A Guide to Lectures and Laboratory Work for Beginners in Chemistry. A Text-book specially adapted for Students of Medicine, Pharmacy and Dentistry. By W. Simon, Ph. D., M. D., Professor of Chemistry in the College of Physicians and Surgeons, Baltimore, and in the Baltimore College of Dental Surgery; Emeritus Professor in the Maryland College of Pharmacy; and Daniel Base, Ph. D., Professor of Chemistry in the University of Maryland. New (10th) edition, enlarged and thoroughly revised. Octavo, 774 pages, with 82 engravings and 9 colored plates, illustrating 64 of the most important chemical tests. Cloth, $3.00, net. Lea & Febiger, Philadelphia and New York, 1912.

When a book on chemistry runs into ten editions it has something of value to recommend it. In the present revision this work has been carefully brought to date, and much new matter introduced. Probably to the reader and student of today the most interesting chapter is that on Physiological Chemistry, a subject which in recent years has been much to the fore. More than one hundred pages have been devoted to this subject, and it is the latest expression on this important matter. The publishers have brought out the volume in their usual efficient manner.

School Dental Clinics: Their Foundation and Management. By C. Edward Wallis, M. R. C. S., L. R. C. P., L. D. S., Dental Surgeon and Lecturer in Dental Surgery, King's College Hospital; late Dental Surgeon to Victoria Hospital for Children, Chelsea, and L. C. C. Industrial School, Feltham. Eighty pages. Price 3/6 net. Published by Claudius Ash, Sons & Co., Ltd., London, England.

There is no subject more prominently before the profession at this time than the one outlined in this volume, and it is precisely the kind of a book that every man should have who is interested in the work. It is frequently the case that committees appointed by dental societies to take up this work are largely at sea as to how to proceed, and to them the present volume will come as a source of valuable information. The book deals with the methods to be pursued in inaugurating the work, and shows illustrations of various clinics of this sort, with pictures of "Tooth-brush Clubs," etc. It deals with the necessary equipment for such clinics, and outlines the furniture, instruments and other adjuncts to the minutest details. Then the author gives a bibliography which takes in the various books and reports which have been published on this subject. The work of the printers of the volume is exceptionally good, and worthy of all praise.

THE INTERNATIONAL DIRECTORY OF THE MANUFACTURERS AND DEALERS IN DENTAL AND SURGICAL GOODS, in addition to a directory of dental surgeons and dentists in Austria, Hungary, Switzerland, Belgium, Holland, Scandinavia, Russia, France, England, Italy, Spain, Portugal, The Balkan Peninsula, Asia Minor, India, China, Japan, Central America, South America, Africa and Australia. Vade Mecum containing a list of manufacturers of articles for surgeons, dentists, hospitals, dental depots, exporters, importers of dental and surgical instruments and apparatus sundry-articles, factories for dressing and bandaging material, etc. Containing about 30,000 addresses from all over the world, arranged according to countries and indexed alphabetically in four languages, English, German, French and Spanish. First edition. Price $8.00, or £1.13. Published by Hermann Meusser, Berlin, Germany.

Activities in the dental world are resulting in the publication of all kinds of books, and the literature of the profession is extending into lines undreamed of a few years ago. Here is a book dealing mostly with the dental and surgical supply business, but including a directory of dentists throughout the world with the exception of Germany and the United States of America. A great deal of very useful information has been gathered together in this work, and it will be found of much service not only to dental supply houses but to the average dentist who has occasion to refer to members of the profession in other countries. We have taken the pains to verify the names and addresses of many foreign dentists and in every instance, so far as we have gone, we have found the information correct. If it were not for increasing the bulk of the volume too much, it would be a convenience to have included in it the dentists of the whole world, but in the United States we already have a dental directory and there is also probably one in Germany. In fact, several countries have published a directory of the dentists, but this is the first instance where a comprehensive attempt has been made to cover so wide a territory. It is an original and a very praiseworthy idea and we wish the publishers success.

A TEXT-BOOK OF DENTAL PATHOLOGY AND THERAPEUTICS. For Students and Practitioners. Based upon the original of the late HENRY H. BURCHARD, M. D., D. D. S. Rewritten by OTTO E. INGLIS, D. D. S., Professor of Dental Pathology and Therapeutics in the Philadelphia Dental College, Philadelphia. New (4th) edition, thoroughly revised. Octavo, 768 pages, with 671 engravings and a colored plate. Cloth, $5.00, *net*. Lea & Febiger, Philadelphia and New York, 1912.

When Dr. Henry H. Burchard died he left as his greatest legacy to the profession this splendid book on Dental Pathology and Therapeutics, and since his death it has been kept well up to date through revision by Dr. Otto E. Inglis. In the present volume much rewriting has been done and much of worth added. One of the most valuable chapters is that on "Malformations and Malpositions of the Teeth," which leads to a consideration of impaction of teeth. It is only very recently that the significance of this matter has been recognized by the profession. Reflex disturbances through irritation from impacted teeth have caused untold suffering to patients, and too frequently this suffering has been needlessly prolonged through failure on the part of the dentist or physician to recognize the cause. Not till the advent of the X-ray was it possible to determine many of these impactions, but now there is no longer any excuse for a dentist to allow a patient to suffer through neuralgia or other reflex disturbances about the face or jaws without determining the possible presence of irritating substances in the jaws such as impacted, teeth, etc.

This chapter will prove a very instructive one, and we commend it to the careful study of every practitioner and student. In fact, the whole book will add to the efficiency of any dentist who reads it, which is the highest function a book can perform.

MOUTH HYGIENE AND MOUTH SEPSIS. BY JOHN SAYRE MARSHALL, M. D., Sc. D., Syracuse University. Captain U. S. Army, retired. Formerly Examining and Supervising Dental Surgeon U. S.

Army; President of the Board of Examiners. 262 pages. Price, $1.50. Published by J. B. Lippincott Company, Philadelphia and London.

Here is a book to make the soul of man rejoice. It is the kind of gospel which dentists and physicians need, and which the public generally can read with immense profit. Much has been written in our dental periodicals in recent years upon this subject, but no one has so systematically gathered the facts into orderly array and presented them in so forcible a manner as has Dr. Marshall in this volume. He hits straight from the shoulder where hard hitting is necessary, and it is refreshing to read some of his statements. To repeat all the good things he says would be to practically reproduce the entire book, but we cannot resist the desire to quote a paragraph or two where he deals with the danger of transmitting infection through the medium of neglected and diseased mouths. These paragraphs apply particularly to the physician, but an equal arraignment might easily be made of many dentists. He says: "No surgeon or accoucheur should approach a patient until he has rendered his mouth as clean as possible by the use of the toothbrush and plenty of sterile water, nor permit an assistant or a nurse to be present at an operation or an accouchement without having taken the same precautions.

"It is just as important to exclude the possibility of infection from the unclean mouths of the operators and the attendants as it is to exclude the danger of infection from unclean hands, towels, sponges, instruments, ligatures, etc.

"The careful surgeon before making a laparotomy will take a hot bath, shampoo his hair, and put on sterilized clothing, and require attendants to do the same. Great care is exercised in scrubbing the hands, cleaning the finger nails, and rendering them as sterile as possible. As an extra precaution, all wear sterilized rubber gloves, and a sterilized cap over the hair, and a piece of gauze over the nose and mouth. But how many ever take the same care to render the mouth clean before operation? Not one in a thousand. How many think of the necessity of having the mouth of the patient cleaned before an operation? Not one in a thousand, if the operation does not involve that region."

Dr. Marshall's long service in private practice and in the army dental corps has given him unusual opportunities for observing the various factors involved in the subject which he treats, and he brings to it that rare quality of precision and penetration which stamps his statements as authoritative and convincing. The book will do a great good—greater probably than even the author himself can estimate.

"The Prevention of Dental Caries and Oral Sepsis" (being the Cartwright Prize Essay of The Royal College of Surgeons of England, 1906-1910, with some additions), by H. P. Pickerill, M. D,. Ch. B., M. D. S. (Birm.), L. D. S. (Eng.), Professor of Dentistry and Director of the Dental School in the University of Otago, N. Z.; London: Bailliere, Tindall & Cox, 1912. Price in the United States, $2.75.

This book is creating a great deal of interest in the dental world and not without reason. No more significant statement has been made in recent years concerning dental caries than this by Professor Pickerill, and we very strongly urge every one who is interested in the subject—and who in the dental profession is not interested?—to procure a copy and study it.

Formerly there seemed to be a tendency in the profession to attribute the varying manifestations of dental caries to the character of the teeth themselves, and even yet we hear much in certain quarters of "hard" and "soft" teeth. But the trend of thought is changing, and there seems a greater disposition on the part of investigators to attribute the manifestations of caries to the conditions surrounding the teeth rather than to the teeth themselves. This we believe to be a very healthy change, and one in accordance with logical findings. It is also a very encouraging conclusion, because of the fact that if decay was induced by faulty tooth structure there would be little hope of preventing it on account of the manifest difficulty of changing, in any essential degree, the tooth structure after it has once been laid down by nature. But granted that it is a matter of environment and then we may ultimately hope to so change the environment that we can control the disease.

Professor Pickerill has gone somewhat exhaustively into the study of those conditions which may be supposed to influence immunity and susceptibility, and while he modestly admits that his work is still incomplete, yet he has given the profession something more to think about than the average author of books. He places great emphasis upon the significance of the saliva as a factor in the inhibition of caries, and traces the effects of certain food materials upon the character of the saliva. He deals extensively with the diet of races relatively immune, and then considers the dietaries of modern civilization, pointing out their errors and the correction. He places stress upon the desirability of including in the diet some substance which will tend to stimulate the saliva, to the end that acid reaction in the mouth is minimized. One paragraph, quoted with his own italics, will show the trend of his contention: "What is therefore to be advocated is that *all meals should contain a fair proportion of salivary excitants, and more important still, should both commence and end with some article of diet having an acid reaction.*"

For this purpose he favors fruit, his contention being that an acid article of diet will so cause salivary stimulation that the production of acid in the saliva will be reduced or negatived.

He concludes his book with a splendid plea for education of the people as to the significance of the teeth and the proper care of them, and deals with the desirability of such legislation as shall control those agencies which tend to drag down instead of build up the human family. The book should be in the hands of every dentist, and indeed every physician as well.

PRACTICAL HINTS.

Two Reasons Why It Is Well to Use a Post of Not More Than 16 Gauge:—First, because less cutting of the root is necessary, and, second, because the post is so much smaller in diameter than the hole in the porcelain crown, that wide latitude is possible in the angle at which the artificial crown may stand as compared with the line of the root.—*A. W. McCandless, D. D. S., Chicago, Ill.*

Metallic Lining in Vulcanite Dentures:—Many prosthesists have experienced difficulty in removing the separating gauze or cloth, placed over the rubber in the packing and reopening of the case, and mainly for this reason have not employed the use of any of the different metallic linings, which finish up so beautifully and make your work superior to the other fellow's.

After boiling and closing the flask perfectly, place in cold water until perfectly cold, separate carefully and bathe chloroform over the cloth, wait a minute, and you can remove the cloth without distorting or disarranging the rubber.—*C. E. Allen, Chicago, Ill.*

Sensitive Dentin:—That an acid condition of the secretions around the affected part is one of a number of causes for such a condition has been fully determined by the experiments of Miller and others, and the litmus paper test readily proves the theory.

Dr. Miller has demonstrated the wasting of tooth tissue both by acid salts and abrasion, so when we find in the patient each of these conditions we cannot be at loss to find the cause of the trouble. Probably on account of too vigorous use of the toothbrush, in the wrong way, and it is invariably in those persons who give their teeth more than ordinary care these conditions prevail, we find at the gingival line of the anterior teeth a worn and polished surface or indentation, perhaps on the buccal surfaces of the posterior teeth grooves, may be discovered.—*L. L. Davis, D. D. S., Chicago, Ill.*

Fixed or Permanent Bridge Work:—I do not approve of such work being held in place by abutments made of plain inlays set in live teeth, as the constant movement, caused by the continued mastication will certainly loosen them, and in many cases cause fracture of the teeth. I believe in devitalizing the pulp of the teeth, which are to be used for abutments, and such inlays made with posts which will go into the root canals, will furnish a much firmer and reliable abutment, and I will say this, gentlemen, that now that we can by use of Radiographs make the cleaning of the pulp canals much simpler we have no excuse for making plain inlay abutments in live teeth for that purpose. The same method applies to the use of gold crowns in the human mouth, a porcelain crown made in pulpless teeth being so much handsomer and more natural looking than the gold shells or crowns that have become so common.—*E. M. S. Fernandez, D. D. S., Chicago, Ill.*

Staining Cleaned Teeth to Kill Microorganisms:—First, stain the bacterial plaques covering these microorganisms so they may be readily discernable and removed; thus insuring really clean teeth in a manner not otherwise attainable.

Staining was first called to my attention by Dr. Frank Skinner, who used a complicated iodin stain which proved objectionable to patients, hence I hit upon the permanganate of potash stain, and this is the second part of the clinic.

This simple compound is made by adding two or three grains of boracic acid scales or crystals to an ounce of saturated solution of permanganate of potash in water. The boracic acid acts as a mordant and makes the stain more permanent than it otherwise would be, thus giving more time for removal of the plaques.

Any stains on the mucous tissues may be removed by rubbing with 3 per cent dioxide of hydrogen. The teeth are swabbed with the solution and then rinsed with water, when all cleaned surfaces will be free from stains.—*Lucien H. Arnold, D. D. S., Chicago, Ill.*

Enlargement of Root Canals:—Tapered reaming broaches operated by thumb and finger only, are used to advantage in a relatively small number of canals. In these the coronal portion needs to be cleared or reamed a little to allow the entrance and operation of fine cleaning broaches.

Except in preparation for a dowel the use of any engine-driven instrument in a canal is an exceedingly dangerous practice. Small crooked flat canals cannot be followed to the apical foramen by any enlarging instrument or process known to men. Fairly straight round canals that admit a fine broach do not need enlargement and would be the worse for it if practiced.

In short, canals that can be enlarged do not need enlargement; and canals that do need enlargement cannot be enlarged without danger of perforation, failure to follow the canal, or breakage of instrument, any of which leaves the case worse than it was before if not hopeless.

Whoever would be convinced should try out his favorite enlargement schemes upon extracted teeth where he can see what actually happens.—*W. C. Gowan, Peterborough, Ont.*

Removable Porcelain Bridge:—Gold plate is fitted over the ridge where teeth are to be supplied and wired around the entire outer edge.

Select the kind of attachments best suited to the case, and solder on plate. The plate should be thickened with solder at the points where countersunk nuts are to be fitted.

Next fit 36 gauge platinum plate over the gold plate, allowing it to extend well over the wired edge. With platinum in place over gold plate, drill holes where posts and nuts are to be fitted. Select iriodio-platinum wire the same gauge as the pins of facings, and solder to platinum, allowing the wire to extend through the plate on the tooth side to help support the porcelain. The posts should not be threaded until porcelain work, which is done as "continuous gum" piece, is completed.

Bryant bridge repair nuts are fitted, the parts cemented together, and the nuts brought to place.

This method is best suited to lower cases, where the porcelain gum restoration is a great advantage, and, the parts being separable, it is very easy to repair.—*T. H. McClure, Chicago.*

Helps in Soldering:—In the soldering of bridges, difficulties are sometimes experienced from the flowing of solder over margins of inlay-abutmentpieces, where such are not carefully protected by investment.

The solder may draw over the gingival festoons of crowns, thereby preventing the piece from going to place.

Again the joint may be made too weak, necessitating added soldering.

Also where much solder is required there often results an appreciable shrinkage, disturbing the relations of the piece to the abutments.

These and other difficulties may be overcome by packing the joints, after the piece is invested and the wax boiled out, with soft gold, a fibre or mat gold is to be prefaced—f. ex. Corona.

The gold is packed into the space loosely and built up to the desired shape and contour of the joint. It is then fluxed well and soldered with only just enough solder to be taken up by the packed gold. The advantages to be obtained by this procedure are: A stronger union of the separate pieces of the bridge, prevention of shrinkage, and absolute control of the flow of the solder.—*C. N. Pederson, D. D. S., Oak Park, Ill.*

Banded Cast Base Crowns:—The root is prepared by grinding it down to or slightly beyond the free margin of the gum on labial, letting it extend slightly on the lingual; trim off all enamel; fit band, permitting same to extend above root end about one millimeter, on mesial, distal and lingual. Trim it flush on labial and very narrow.

The extending portion of band is then notched on mesial and distal with a No. 2 burnisher, and notches bent until they grasp firmly over root end; serving, first, to prevent the band from passing further rootward than intended, thus causing injury to the peridental membrane; secondly, to grasp eventually the casting wax.

A post is then accurately fitted into the root canal. The crown chosen for the case is ground, if necessary, softened casting wax is then placed about the post and the crown with the post is forced into position and proper alignment. The three pieces are then removed, attached together by the wax and all trimming and finishing preparatory to casting done outside of the mouth. The case may be frequently replaced to ascertain proper alignment, etc. Cast in the usual manner, using 22K clean gold, and finish. At this time the labial band may be trimmed off entirely if so desired. By this method an accurate impression is procured of the root end, assuring an absolute adaptation in the most difficult cases.

In cases where decay has enlarged the root canal a good result may be obtained by reaming out the root canal to a conical shape and forcing casting wax into canal about the post, thus producing an accurate fitting cast post.—*J. E. Jacobs, D. D. S., Chicago.*

A New Hemostatic for Hemorrhages Accompanying Dental Operations:— The agent is a powder of a proteid made from animal's blood. Its power lies in the fact that it increases the activity of the coagulating ferments of the blood. I have never found this hemostatic irritating or producing any after effect. In my practice I have employed this agent with much gratification to both the patient and myself in saving a great deal of time and obviating the usual amount of expectorating blood after extractions. I have used this powder called Coagulin in the following operations during the last eight months:

1. Scaling teeth with large bleeding alveolar pockets from tartar or pyorrhea.

2. Preparing teeth for banded or shell crowns where the peridental membrane is detached.

3. In hemorrhage, after extraction of loose teeth with bleeding gums, and wisdom teeth, whether impacted, unerupted, or associated with periostitis. Especially in three hemophilic cases this powder ferment has been very effective in arresting hemorrhage and secondary hemorrhage.

4. In operating on bone in the lower jaw, the operative field is kept clearly in sight and time saved in sponging.

APPLICATION.

It is very important that all excess blood, mucous or saliva be swabbed or sponged away before applying the powder.

Take up powder on *moist sterile* cotton pellets and *place directly in contact with bleeding surface,* hold with slight pressure for a minute or two.

After extraction, unless hemorrhage is very severe, allow bleeding to occur for five or six minutes, then apply powder known as Coagulin.—*Joseph Eisenstaedt, M. D., D. D. S., Chicago, Ill.*

MEMORANDA

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of $2.00 an inch.]

IOWA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Iowa State Board of Dental Examiners for the examination of candidates will be held in Des Moines commencing December 9, 1912. For application blanks and particulars write J. A. West, Sec'y, 417 Utica Bldg., Des Moines, Iowa.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Michigan State Board of Dental Examiners will be held at the Dental College, Ann Arbor, commencing Monday, November 11th, at 8 a. m., and continuing through the 16th. For application blanks and full particulars address F. E. Sharp, Sec'y, Port Huron, Mich.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The Wisconsin State Board of Dental Examiners will convene in Milwaukee at the Wisconsin College of Physicians and Surgeons, on Tuesday, Dec. 17, 1912, at 10 a. m., for examinations of applicants to practice in Wisconsin. High school diploma, application and $25.00 fee must be filed with the secretary 15 days prior to above date. Dental diploma to be presented in advance of examination. W. T. Hardy, Secretary, 422 Jefferson St., Milwaukee, Wis.

THE NEW MANAGER.

The Denver Chemical M'f'g. Co., who manufacture antiphlogistine, have secured the services of Mr. Harold B. Scott, as manager of the company. He succeeds J. C. Bradley, who is retiring from that position. Mr. Scott comes to the company with a splendid record in the business world, and he will undoubtedly add great strength to this already strong organization. We wish him and the company success.

COLLEGE OF DENTAL AND ORAL SURGERY OF NEW YORK.

Graduates—E. R. Bauman, H. F. Berkey, S. L. Beckwith-Ewell, L. V. Bickow, J. Z. Biegeleisen, R. A. Bromberg, A. Chinich, H. A. Curtis, S. Eliowicz, M. C. Ellenstein, S. B. Englander, H. Fass, I. Gellman, S. H. Goodman, T. M. Hatton, G. B. Jolliffe, A. J. Johnen, F. B. Kelly, J. Korf, B. A. Lanset, L. B. Lippman, J. E. Luhan, M. F. MacElroy, A. F. Muller, G. S. Nash, T. O. Peterson, N. A. Posner, A. Ravitch, J. Reitman, L. M. Robins, C. Rosell, D. Rosovitch, H. E. Roy, C. R. Salter, L. Sapirstein, N. Shapiro, A. Startz, A. Tananbaum, H. Wahrman, T. C. Webb, M. Wolf.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The semi-annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois, will be held at the Northwestern University Dental School, corner Lake and Dearborn streets, Chicago, beginning Monday, November 11, 1912, at 9 a. m.

All applications together with the fees, twenty-six dollars ($26.00), must be filed with the secretary at least five (5) days prior to date of examination.

Address all communications to T. A. Broadbent, Secretary, 705 Venetian Building, Chicago, Ill.

MINNEAPOLIS DENTAL SOCIETY.

The annual mid-winter meeting of the Minneapolis Dental Society will be held in the Masonic Temple, Minneapolis, Minn., on Friday and Saturday, January 24 and 25, 1913. Space has already been reserved for even a larger manufacturers' exhibit than was given last year. Clinics will be given by some of the best men in the profession who will demonstrate all of the newest and most useful methods. The entire meeting is to be conducted along unique and original lines, a new method of arranging the exhibits; a different and better way of classifying clinics, also many other new things which will add to the pleasure and profit of each visitor. For information address: O. DeForest Davis, Secretary, 404 Donaldson Bldg., Minneapolis, Minnesota.

DR. STOCKTON'S DEATH.

The following is taken from a New Jersey paper of September 10, 1912:

DR. CHARLES STACEY STOCKTON.

Dr. Charles Stacey Stockton, who practiced dentistry in New Jersey from 1857 until last June, when he underwent an operation at the Orange Memorial Hospital, died yesterday at his home in East Orange as a result of the operation. He was the dean of New Jersey dentists, having been a founder of the New Jersey State Dental Society in 1870. Dr. Stockton was a member of the New York Odontological Society, the Stomatological Society and the First District Society of New York and the National Association of Dental Examiners. At the time of the Columbian Exposition he was one of the fifteen dentists in the United States to organize the World's Columbian Dental Congress. Dr. Stockton was born in Springfield, Burlington County, N. J., on Dec. 17, 1836. He was married in 1857 to Miss Martha Smith of Centre Moriches, L. I., who survives him, with a son, Dr. Frank O. Stockton, and a daughter, Mrs. Robert Elliott of East Orange.

OHIO STATE DENTAL SOCIETY.

The committees appointed to prepare for the holding of the 47th annual meeting of the Ohio State Dental Society, in Cincinnati, Ohio, December 3, 4, 5, 1912, have been and still are diligently carrying on their work. The program as it stands at present is both unique and interesting. President's address, Dr. C. R. Converse, Springfield; Professional Ethics, H. C. Brown, Columbus; Oral Surgery, J. V. I. Brown, Milwaukee, Wis.; Removable Bridge Work, Chas. F. Ash, New York City; Instrumentation in Pyorrhea Treatment, A. F. James, Chicago, Ill.; Diagnosis of Diseases of the Pulp, Herman Prinz, St. Louis, Mo.; Lecture, Venereal Diseases, illustrated by stereopticon and moving pictures from actual subjects, by E. A. Deeds, of Dayton, Ohio. This lecture has been prepared by the National Cash Register Co., at a cost of about $15,000. The medical societies before which it has been presented pronounce it a wonderful exhibit. It is needless to call attention to the growing necessity for a thorough understanding of these diseases by the dental profession. The local oral hygiene committee will give a practical exhibition of their school work, having a whole school at work at their own school building, under the direction of the oral hygiene committee of the Cincinnati Dental Society, giving every detail of the work, from primary examination up to operative work. The practical working of all the latest phases of dental radiography will be demonstrated by Dr. Sidney Lange of Cincinnati. One of the most complete outfits will be set up, and radiograms taken, developed, finished and delivered on the spot. The clinics will be very attractive. The Sinton Hotel will be the headquarters.

Statement of the ownership, management, circulation, etc., of THE DENTAL REVIEW, published monthly, at Chicago, Ill., required by the Act of August 24, 1912.

NOTE—This statement is to be made in duplicate, both copies to be delivered by the publisher to the postmaster, who will send one copy to the Third Assistant Postmaster General (Division of Classification), Washington, D. C., and retain the other in the files of the post office.

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W. A. WILDE, Business Manager.

Sworn to and subscribed before me this 30th day of September, 1912.
(SEAL) FRANCIS W. BOYDEN, Notary Public.

(My commission expires January 14, 1915.)

THE
DENTAL REVIEW.
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PRESIDENT'S ADDRESS.*

BY HENRY L. BANZHAF, B. S., D. D. S., MILWAUKEE, WIS.

It affords me much pleasure to welcome you to the 42nd session of this Society.

I fear that I shall not be able to convey to you in words how much I appreciate the honor which you conferred upon me last year by electing me to the highest office within your power to bestow. That this honor came to me unsought and without a contest, most of you know. That it was conferred upon me by the unanimous vote of this body after twenty-five years of active service, all who participated in this move will remember. To preside over your deliberations at this time, therefore, is more than an ordinary event to me. It marks an epoch in my life, and is, in fact, my professional silver jubilee. I would like you to know and feel that I esteem this event as the highest honor which has been conferred upon me during my entire professional career, and with all my heart I thank you.

It is a little difficult for the most of us to realize that it is more than two score years ago since Edgar Palmer, D. W. Perkins, J. C. Luke, Arthur Holbrook, E. W. Foster, E. N. Clark, N. H. Drew, Charles C. Chittenden, Albert Soliday, George A. Sherwood, William D. Brown, C. W. Barnes, and L. C. Stewart founded this society. Nearly all of these have passed on to their last reward. Only one remains in Wisconsin, Dr. Arthur Holbrook of Milwaukee, who is now enjoying the fruits of his long years of service devoted to humanity by travel abroad. I know that you all join with me in expressing the hope that Dr. Holbrook may return to us, restored in health, and that we may enjoy his counsel and encouragement for years to come. These men who banded themselves together for the purpose of founding this Society were patriots; they dreamed dreams and with prophetic eyes, saw in the future what the profession of dentistry would mean to the health and moral uplift of our people. How richly this service which these men rendered to Wisconsin has been rewarded we all know and appreciate.

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*Read before the Wisconsin State Dental Society, July, 1912.

The profession of dentistry has always made progress in Wisconsin and has always stood for the highest professional and educational standards. Sometimes this progress was slow; at times in the evolution of our work, it may even have been retarded on account of peculiar circumstances and conditions, but the ideals aimed at by the profession were always progressive and in the interest of the people of this state, rich and poor alike. Everywhere today in the state and in the nation we witness an all-absorbing, growing interest in behalf of the health of all the people. Relatively speaking it is only a few years ago that dentists generally devoted their best thought and their greatest efforts to the development of finger skill in the administration of remedial agencies. By and by the lamp of science was lighted, the pendulum of professional thought swung from the known to the unknown, an all wise Providence gave us a Miller, a Williams, a Michaels and our own beloved Black. Others joined these. The list is too long to enumerate. We studied causation with the result that today the dentists of the world are engaged in a mighty health movement which has gained such momentum that it has been practically recognized as being of paramount importance, and as being closely related to good citizenship by all civilized governments.

In a sense every man is his brother's keeper, and I heartily congratulate you upon being permitted to practise your profession at a time when we no longer alone seek to cure, but also to prevent disease.

I trust that you will bear with me for a few moments while I refer to the more recent history of our society and what it has accomplished. You will remember that after two years of effort this society was reorganized, and on July 23, 1908, adopted a new constitution and by-laws. The plan which had been introduced by Illinois, and was patterned after the plan of the American Medical Association, and which has been quite generally adopted in other states, has worked out well in Wisconsin. I do not wish to weary you by stating unnecessary facts, but on account of the many young men who have come into active membership during the last four years, and who, I fear, may not have taken the time to thoroughly familiarize themselves with our constitution, I beg your indulgence while I quote Article II under the head of "Object."

ARTICLE II.

Object.

Its object shall be to promote the public welfare by the advancement of the dental profession in education, science, mutual fellowship and good feeling, by union of effort with other local organizations as component parts of the Wisconsin State Dental Society, by the advocacy of proper legislation, and by cooperation with the medical profession in all matters of mutual interest and advantage to the people of the state.

You will agree that this is indeed a broad platform; the most progressive kind of a program. Have we fully met this standard? Have we as a society done our best to bring into active membership all the members of local societies and thus strengthen our position in this state by presenting a united front in all matters respecting the welfare of our people and our profession, and thus show as we should show a membership of ninety per cent of all the ethical dentists in the state? Many of our active workers have spent much energy and time to improve our conditions but the result has not been what we had a right to expect. There are still too many societies in Wisconsin who are not component societies of the state society; who are apparently satisfied to do a local work, and have not been aroused by us to take an interest in the work that this society is trying to do. These societies to whom I have made reference should adjust themselves to the changed conditions under which we are now living, apply to this society for a new charter, awaken to the great possibilities now before us and them, and thus extend their activities to a state and national field. A new field is open. It is my firm conviction that the time is near at hand when life insurance companies quite generally will require dental inspection in addition to the medical inspection demanded of all applicants for life insurance. It is now recognized by the leading members of the medical profession that a clean mouth and sound teeth are important factors making for longevity. We should realize the true significance of the work that is being done along these lines. I recommend that during the next year this society take the necessary steps to plan a movement that shall reach into every city, town and hamlet, and that an opportunity be given to every ethical dentist in this state to become a member of this society, with a view to bringing the membership up to the 1,000 mark and thus increase our efficiency as public servants and our usefulness as a society.

THE REORGANIZATION OF THE NATIONAL DENTAL ASSOCIATION ALONG THE LINES OF THE AMERICAN MEDICAL ASSOCIATION.

All of you know what this means. You know of the criticism that has been made of the N. D. A. for years, to the effect that it was not representative and that its efforts were not properly and wisely directed. To meet this objection a plan was submitted at Cleveland last year by which a member of the State Society in good standing automatically becomes a member of the N. D. A. upon the payment of $2.00 into the treasury of the national body. It was also suggested that this might include the Journal provided state societies pledged approximately 50 per cent of their membership. In this connection it should be remembered that the plan of the American Medical Association requires a membership fee of $5.00 which includes subscription to the Journal. The reorganization plan is now being voted on by the various state societies for adoption, rejection or amendment, and will come up for final action at the next meeting of the N. D. A. to be held in Washington, D. C., in September next. On account of the conditions which I have already explained to you, and which are purely local, I feel that we are not yet ready to pledge a 50 per cent or in fact any percentage of our membership to this new reorganization plan. We should, however, heartily encourage the idea of reorganizing our national society, and to that end I recommend the adoption of a resolution favoring the reorganization of the N. D. A. along the lines of the American Medical Association without a pledge of a percentage of our membership, and that a copy of this resolution be sent to the Secretary of the Committee on Reorganization of the N. D. A.

DENTAL EDUCATION IN WISCONSIN.

For nearly a score of years the subject of dental education has engrossed the attention of thoughtful men in this state. Its progress all along the line has been onward and upward, and always with a view of improving the efficiency of the output of our colleges. Since the first law regulating the practice of dentistry in Wisconsin was passed by the legislature in 1885 there have been three amendments at different times. The Supreme Court of this state about six years ago defined the duties and function of the State Board of Dental Examiners. A requirement of graduation from a four-year high school or its actual equivalent for admission to our colleges has become firmly established by law. The strong arm of the State Board has been strengthened and its work is systematized and its duties performed with justice to all, but always in the interests of the people in demanding fitness to practice dentistry in this state.

The dental law as amended by the last legislature, I believe to be one of the best and most progressive dental laws upon the statute books of any state. Dental education in Wisconsin respecting the requirements for admission and the technical training offered is entitled to the confidence and respect of the profession in this state as well as in the country at large. In this connection I am reminded of the definition of the word "education" as given by Professor Huxley. I cannot quote the exact words, but the substance of it is about as follows: "Education is a means by which the human being is prepared to adjust himself to his environment." This surely can be applied to our present system of dental education. A dental college which prepares its students to become safe beginners does well, but the larger part of a dentist's education begins when he undertakes to practice his profession. The work of this society should play an important part in this scheme of education and should in fact be a continuation school to all earnest seekers after truth and knowledge.

THE DENTAL PROCESS PATENT BILL.

I want to say just a word about process patents, without offering arguments relative to the merits of this question.

I favor the adoption of a resolution by this society endorsing H. R. 20591, known as Dental Process Bill, and that a copy of this resolution be sent to the chairman of the Patent Committee, House of Representatives. If this bill is passed by Congress the process patent on anything which will cure or correct disease will become a thing of the past.

PRESENT DAY PROBLEMS WHICH THE DENTAL PROFESSION SHOULD HELP TO SOLVE.

That there are many problems in connection with our work which are pressing for solution we all understand and appreciate. Some of these are remedial in character; some aim at prevention; others are sociological; all are corelated. I may not take the time of this convention to discuss at length any of these, but will content myself with a brief reference to each.

REMEDIAL AGENCIES.

During the past year much publicity has been given to the statement of Dr. William Hunter, eminent physician and pathologist at Charing Cross Hospital, London, to the effect "that dentistry as practiced by some able men, especially in America, is spreading deadly maladies not only among the moderately well-to-do but among the very rich." Our profession in America should not receive this criticism with a frenzied outcry of denial, but instead give thoughtful consideration and study to it. That the charges made may have been exaggerated, I will not deny. We need to be reminded that dentistry is founded on anatomy, physiology, chemistry, pathology, bacteriology and collateral sciences. Let us take an inventory of our own professional equipment for the work of saving the health of those who are entrusted to our care. If we will do this earnestly and with courage, then sepsis and auto-intoxication resulting from dental operations will be limited to those who practice dentistry merely for the money there is in it, and without regard to the health and happiness of their patients.

NITROUS OXID AND OXYGEN.

The use of nitrous oxid and oxygen as a means of lessening the dread of dental operations, and as a means of rendering many, in fact nearly all, of these absolutely painless should be encouraged by the profession. The American Medical Association at its recent session held in Atlantic City a few weeks ago declared itself in favor of this anesthetic for major operations. This is significant of the trend of the times, and, moreover, is a deserved compliment to the worth of the dental profession by the most generous thought of the medical profession.

DIAGNOSIS.

We should strive to be more scientific in making a diagnosis of a given case. To this end I desire to urge upon you the more general use of the X-ray in dental practice, the importance of which cannot be overestimated.

PREVENTIVE DENTISTRY.

We are told that there are in the United States more than twelve million school children who are suffering from physical defects which can be traced directly to neglected teeth.

The exact number of course is immaterial. The important point to remember is that the statement is in fact true. It also seems to me as entirely proper to remind you of the report of the Russell Sage foundation, which, as you know, is a commission founded for the purpose of making a special study of the diseases of old age. The report made by this commission is to the effect that most of the diseases of old age have their origin in the long continued lack of a good masticatory apparatus, and in the neglect of the teeth in middle life. It is a conservative statement to say that mouth hygiene does not represent a theory; it is a movement for the betterment of the physical and mental condition of the human race.

Surely this is a work which is worth while, and the contemplation of which should inspire us to a mighty effort to improve our knowledge and to perfect our skill.

Many suggestions to this end have been offered. Those which appeal to me most and which I will mention briefly are:

First—Chair side instruction to the patient in the care of the teeth by the dentist, beginning, if possible, in early childhood.

Second—A sympathetic and helpful spirit of cooperation with the family physician. Preventive medicine and modern dentistry should go hand in hand. The members of the dental and medical profession should join their efforts in their battle with disease.

Third—The work which the dental societies and the dental journals of this country are doing should meet with greater encouragement in Wisconsin. It is the key to all post graduate work and must not be neglected in the progressive health campaign in which we are engaged.

Fourth—Publicity.

Last, but by no means least, in importance, is our attitude toward the press of the country. I am even tempted to urge that it is of first importance. The newspapers and magazines published in the United States are for the most part leading the way in progress by giving publicity to those things which have a direct bearing on the health of the people. If the newspapers of Wisconsin have in the past not given due credit to the work of Wisconsin dentists, and have occasionally referred to us by the name and style of "tooth-pullers" and "tooth tinkerers," then it is our own fault, not theirs. I fear that we have been hiding behind a false standard of ethics, deceiving ourselves with the mistaken notion that publicity given to what we do as professional men, would be advertising and therefore not ethical. If this were self-exploitation, it would be advertising and therefore not compatible with our high calling as members of the healing art. Such publicity, however, which finds its motive in the desire to improve the general health of a community, need not, and should not be given with the idea of self-exploitation. Forget self, give the press the facts relative to our work ,and you will find that the newspapers of Wisconsin are ready and more than willing to do their full share of the work which falls to them as guardians of the public health.

It is silly and foolish to call that kind of publicity advertising, because the people whose servants we are have a right to know whether or not we as dentists are making progress in the discharge of our duties as men and as scientists.

SOCIOLOGICAL PROBLEMS.

Under this head there are only two items which I care to discuss at this time. One is our relation to the people, especially to the poorer people, and the other the relation of the people to us, with special reference to the middle class, those moderately well-to-do and the very rich.

During the past four or five years the relation of the dental profession to those who could not employ the services of a dentist has undergone a great change. Many dentists have made a study of the living conditions of the poor especially with respect to the care of the teeth. It has been found that neglected teeth and an unclean mouth interferes seriously with the progress of children at school. Child truancy and even delinquency in many cases now on record have been corrected almost simultaneously with improved oral conditions. As soon as this was thoroughly recognized the problem was at once regarded as being one of tremendous economic significance and was studied more closely from that point of view. Dental inspection of school children with the assistance of private enterprise, school authorities, and municipalities is now in vogue in most of the larger cities and free dental clinics have been established.

Much of the credit for this splendid showing belongs to the women of America. Almost as soon as it was made clear to them by the members of the dental profession what could be done to improve the living conditions of the poor in respect to dental matters they took favorable action. In fact, the women of this country, in this matter as well as in the matter of compulsory education and child labor laws, have been such a power for the betterment of conditions that the results in future benefits to the nation can hardly be estimated at this time.

For this, if for no other reason, I believe in granting the right of suffrage to women.

I wish also to offer a constructive suggestion which I hope you will take seriously enough to let it bear fruit. It is this:

The National Mouth Hygiene Association is planning to put into the educational field an educational film, or, in other words, mouth hygiene motion pictures to be used in moving picture shows. It has been my experience in Milwaukee in many civic activities that the owners of moving picture shows as a rule are ready and quick to cooperate in anything which is educational and which meets with the approval of the public. I believe the same condition is true in many places. A synopsis of this film is as follows:

SYNOPSIS OF THE MOUTH HYGIENE MOTION PICTURES.

No. 1—Home scene. Five characters. Family eating; father contracts toothache; trouble resulting—dread of consulting dentist; finally persuaded to see dentist.

No. 2—Dentist office scene. The visit. The dentist at work—relief. Dentist's advice as to care of teeth, featuring children's teeth.

No. 3—Home scene. Looking at the children's teeth. Portrayals for the teaching of the care of teeth.

No. 4—Actual schoolroom scene. Examining school children's teeth. Brush drill. Details of one pupil correctly brushing teeth.

No. 5—Unhealthy mouth.

No. 6—Same mouth later (neglected).

No. 7—Details of uncared-for teeth.

No. 8—Progress of decay of tooth.

No. 9—The growth of bacteria in a decayed molar.

The idea was first suggested in a paper by Dr. L. L. Zarbaugh of Toledo. The plan meets with the approval of the Oral Hygiene Committee of the National Dental Association. The cost of the film will be $280.00.

I recommend the appointing of a special committee for the purpose of looking into the feasibility of this plan and of collecting from component societies who signify a willingness to go into such an educational campaign, enough funds to meet the expense incurred. If this effort should prove to be successful, the films can be shown in all communities whose component societies have subscribed to this fund for a week or two, as local conditions may require. I believe the results obtained would more than justify the effort and expense.

THE RELATION OF THE RICH AND THE MIDDLE CLASSES TO DENTISTRY.

The people who belong to these two classes have, of course, always been able to obtain the service of a dentist. Whether or not they have always made the best use of their opportunities in this regard is of course another matter.

Judging the future by the "signs of the times," the day is not far distant when the splendid example set by Mr. Thomas Forsyth in the establishment by endowment of the two million dollar Forsyth Dental Infirmary in Boston to be devoted to the free care of the teeth of the poor, will be followed by others, though perhaps not just in the same way. It may be that our people will soon be ready and willing to be taxed to preserve the health of poor children and thus provide future generations with an increase in the number of sturdy men and women rather than submit to a tax respecting matters which would seem to be of less importance than the health of the people of the commonwealth.

I trust that this convention will be a great success and that your labors may be abundantly blessed, and through you may prove to be a blessing to humanity.

REMOVABLE BRIDGEWORK.*

BY HART J. GOSLEE, D. D. S., CHICAGO, ILL.

The entire success to be obtained from the application of bridge work of any type depends largely upon a judicious selection of that particular type which best meets the requirements of the individual case, and the question of whether a "fixed" or "removable" type should be used, or as to which will offer the greatest assurance of success, from both mechanical and sanitary viewpoints combined, has always been a problem.

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*Read before the Wisconsin State Dental Society, July, 1912.

Broadly speaking, in all cases where the number, relative position, and stability of the remaining natural teeth are favorable to the requirements of a mechanically secure and more or less sanitary structure, "fixed" bridgework will probably always afford the very best means of supplying missing teeth. In that great number of cases in which these essentials to the successful application of "fixed" structures do not obtain, however, or where the number of missing teeth to be supplied compared with the relatively inadequate number which may be used for support and retention, from a purely mechanical viewpoint, combined with the varying degrees of absorption demanding gum restoration, and the accompanying sanitary considerations, removable structures will likewise always be indicated.

Thus each type of structure has its more or less definite sphere of usefulness, and the successful application of each will depend as much upon the judgment exercised by the operator in selecting the best mode of procedure for the individual case, as upon the skill displayed in the construction of the fixture.

When all of the combined requirements of a fixed structure as thus outlined do not present, then a removable one is not only indicated but is demanded, and when this has been determined, and some type of removable structure is contemplated, at least two important features present, primarily: First, the particular natural teeth which will best answer the purpose of supporting the fixture, and, second, the best means of attachment for its retention.

SUPPORTING TEETH.

In determining which of the remaining natural teeth will afford the best support for removable fixture, it should be observed that those to be thus utilized should be strong and healthy, and as nearly directly opposite each other in the arch as is possible.

If pathologic conditions are present, the necessary treatment to put them in favorable condition and insure their longevity should be previously followed, for the reason that the entire success of the fixture is essentially dependent upon their stability.

Additional stability may often be secured by uniting two teeth on one side of the arch, or on both sides, either by making crowns or inlays and soldering them together where they are adjacent to each other, or, if they be removed from each other, as in the case of a cuspid and third molar, for example, with a round iridio-platinum or clasp-metal wire, about twelve gauge, placed in direct contact with the summit of the ridge and attached to a crown or inlay at each end.

In this case you will see what I mean by that. We have a long span extending from the cuspid to the third molar on one side of the arch; too long a span in most cases for a fixed structure. Now the application therefore, of a removable structure, is necessary from a mechanical viewpoint, and we will get an increased stability in each of those two supporting teeth by uniting them together, and at the same time, as you will see in a moment, we will have a means of obtaining anchorage to that, which is very simple. This case will be passed around with the fixture which fits on it, in a few moments.

This latter procedure, which is commonly known as "assembled abutments," gives to each supporting tooth the combined stability of both, and may be otherwise advantageously utilized, and, since the supporting teeth in all instances are to be continuously subjected to considerable stress, every precaution which will insure or add to their permanent stability should be observed.

It is also important, from a mechanical viewpoint that attachments should be placed as nearly opposite each other in the arch as possible, in order to insure maximum degree of stability in the retention of the fixture, and if this is observed two attachments will be all that will be required in the average case.

To use more than two attachments in a single case only involves complications, makes absolute parallelism more difficult, and diminishes the facility with which the patient may be enabled to remove and replace the fixture.

ATTACHMENTS.

The selection of the type of attachment best suited to the requirements of the individual case is perhaps largely a matter of personal preference, but a very few general type will be found to adequately meet the demands of the average case.

Wide clasps encompassing three angles of the tooth, provided with an occlusal rest, not cast, but made of heavy rolled clasp-metal alloy, probably afford the very best means of obtaining anchorage to the natural or artificial crowns of bicuspids and molars.

That clasps should not be cast is especially emphasized, because the molecular rearrangement resulting from casting most of our present alloys destroys to a greater or less extent the very qualities of strength and resilience demanded of them and which undoubtedly obtain best in a rolled or drawn metal or alloy.

In all forms of removable bridge work or partial dentures, where clasps are used, however, some form of occlusal rest is necessary as a means of providing against subsequent settlement of the case. If this precaution is not observed, complete loss of occlusion and usefulness will soon follow.

The telescoping tube and split post attachment is useful when applied to the roots of the six anterior teeth, or where the tube may be buried within the tooth, and without a too liberal sacrifice of tooth structure.

The Roach, Morgan and other types of manufactured attachments will also be found valuable when used in connection with and projecting from either porcelain or gold crowns or gold inlays on the cuspids and bicuspids.

In addition to these, I am pleased to submit a method of attachment which, while perhaps but a modification of some of the previously mentioned types, is entirely new and more or less universally applicable.

This attachment consists in utilizing the grasping principle of an open tube with straight and parallel sides, which is the removable part of the fixture, in combination with a round wire, of about twelve gauge, attached to and therefore a part of the "fixed" portion of the structure, but lying in a horizontal position instead of in a vertical one, in its relation to the supporting fixture.

I refer to this as an open tube, which is not technically or scientifically correct. It is made by opening a tube into a U-shaped form. Dr. Ottolengui has suggested that we call it a clutch. However, I find that "open tube" seems to suit me best until we get a term that will be more scientifically correct. But you understand what I mean by an open tube. Take a round tube, not soldered, and open it until it is U-shaped in form.

Such an attachment may be made by utilizing the tube of a "Roach" attachment in combination with 12-gauge clasp-metal wire, and while simple and easily constructured is especially useful in extensive cases, where the abutment pieces are assembled, though equally applicable to less extensive, or to the most simple, cases.

Now, I will be very happy to pass this around so that you can see if you look inside of the saddle the position of the tubes; how easily they are tightened, and how little room they take up; and in this particular case you can take it off and put it on as often as you want to, because it has already been removed several times. The other two, however, I am not going to permit you to replace very much, because you have to know just how to get them replaced in order to do it without straining.

It is easily applied, easily tightened when loosened by wear, takes up but little space, does not require absolute parallelism when more than one is used on the same fixture, is applicable alike to either gold or vulcanite work, and is secure.

The conception of this attachment on my part was forced upon me in a very interesting manner. About a year and a half ago I inserted a large fixture in the upper jaw, involving the six anterior teeth and the two third molars, the latter being joined to the former with an iridio-platinum wire, 12 gauge, resting upon the summit of the ridge on each side. In about the center of the wire on both sides a vertical split post was attached. This constituted the fixed structure, which was cemented to place, the split posts supporting a removable saddle, which supplied the bicuspids and molars.

A few weeks after the completion of the case the patient returned with one of these split posts broken away from the fixture, leaving nothing to hold that side in place. At first this seemed a calamity, which meant only the destruction and removal of the structure, and the making over of the entire case. As this was not a particularly pleasant procedure to anticipate, and as necessity has always exercised a maternal influence upon the possible inventive ingenuity of man, it occurred to me that I might obtain attachment to that wire by grasping it with an open cylinder, or tube, lying parallel with it, and thus avoid removing and rebuilding the whole fixture. This I did, with the result that this side worked so well and seemed so much stronger than the one where the vertical split post remained, that I subsequently ground it off and used the open tube, and the utilization of this form of attachment in many cases since then have given me more satisfaction than I have ever obtained from any other method.

TECHNIQUE.

In the application of this attachment in all cases where the supporting wire extended distally from the fixed portion of the structure and where it lies on the summit of, and parallel with the ridge, it is essentially necessary that it should possess a "head," which will prevent any splitting or sliding of the removable structure.

I can explain that to you very easily in this case here. We have bicuspids and molars missing on only one side of the arch. All of you who are familiar with mechanical procedures know that probably the most difficult type or case that we have is to supply missing teeth upon only one side of the arch, no matter whether it is upper or lower. Here is my method of supplying bicuspids on the upper and lower side of the arch. That projecting wire, which is to be utilized as a means of sustaining the removable structure projects distally; lies upon the summit of the ridge and projects distally. In such cases it is absolutely necessary to have a head on the end of that wire, because if you did not, the stress of mastication would force the tube backward on the wire and leave a separation between the cuspid and the artificial teeth supplied by the removable structure. On the opposite side we secure attachment there by extending the wire toward the palate, and of course that would overcome any possible movement anteriorly and posteriorly, and therefore the head on the wire is not necessary. That you can observe when this case is passed around, but I would request that you not try to put it on. You can see it goes on very easily if you know just how, but I want you to see both the fixed part of the structure and the removable part, and, therefore, I am going to leave it off and ask yo uto please not try to place it unless you can be sure you can get it there without bending it.

If such a provision is not observed some movement and loss of stability will result from the stress of mastication, but when this wire is placed at an angle, or projects toward the center of the palate, such provision is not necessary.

In that connection permit me to say that you can place that wire in any angle, projecting distally or mesially and it does not affect the open tooth at all.

GOLD SADDLES.

When used in connection with gold saddles, the fixed portion of the structure, including the wire extensions, wherever they may be, should be completed and cemented to position on the supporting teeth. When firmly and securely attached in the mouth the open tubes should then be placed in position in their proper relation to the wire extensions, and a bite, in wax and impression in plaster then taken.

When the impression has been removed, the tubes should be detached from the wire and placed in position in the impression and held securely therein with a bit of melted wax, if necessary.

If the tubes are at all loose in the impression of course drop a little melted wax around it while you are filling up the impression and making the model.

A "dummy" wire of German silver which should be a counterpart of the original, though somewhat longer, should now be fitted into the tubes in the impression, and the latter then varnished and filled with a good soldering investment material. The presence of the "dummy" German silver wires causes the tubes to be held securely in position on the model when separated.

CAST SADDLES.

Where the saddles are to be made by the casting process, as soon as the model has been obtained, each tube should be carefully detached, and a small piece of round, iridio-platinum or clasp metal wire about 17 gauge just long enough to project slightly beyond the tube at each end, soldered to the center of the tube.

Place the tubes back in position on the model, then varnish over the entire surface well in order to facilitate removal of wax pattern and then mold very thin wax to the desired outline of the saddle, and cut out to expose the wires on the tubes.

All of these saddles you see here have been made by the casting process. When you have got your tubes in place with these wires soldered, then mold very thin casting wax over the outline you want your saddle to assume. When that is trimmed away then trim away until this wire which you have soldered to the tube sticks to the wax freely. This will leave a hole in the wax saddle through which each wire will be exposed.

Now stiffen and otherwise perfect the wax pattern, then adjust sprue-formers, remove, invest and cast, using coin gold. When the casting has been made, the opening through it should be trimmed until when fitted to position over the model, the wire will project through.

The relation between the saddle and tube with its wire lug projecting through, should now be securely sustained with hard wax, removed from the model, invested, and soldered, after which the piece may be again placed on the original, and if to be joined with each other by means of a palatal strip, if in the upper jaw, or a lingual wire, if the lower jaw, these should now be fitted, and the attachment made by soldering directly on the model.

In order to make that clear to you let me take a moment to explain that you cannot supply teeth upon one side of the arch in either the upper or lower jaw without having some attachment upon the opposite side. That is a mechanical necessity. In the upper jaw that attachment, whether it carries teeth or not on the opposite side, a secure attachment is best obtained by going across the center of the palate with a strip of metal which I designate here as a palatal strip. That will give you anchorage upon the opposite side, if no teeth are injured, or if they are injured it will give you a means of attachment, two saddles together, in a manner which occupies the smallest possible amount of space, as you will observe in the case just going around. A saddle on teeth in that manner extending across the palate will always support teeth upon both sides, if made strong enough, while in the lower jaw the 12 gauge wire extending from one side to the other is all that will ever be required. When you have made and fitted your two saddles and soldered your two tubes to them, and there be enough saddles, then make your palatal strip fitting the wax in between. Lift that off and cast it and fit it down in between your two saddles, solder it directly on your metal, thus making the removable part of the sub-structure in one piece; originally in 3 pieces, but assembling them and making them into one.

After the substructure has been thus completed, it should be placed in position in the mouth and a bite in wax and impression in plaster then taken, after which the teeth may be arranged and the removable part completed in the usual manner.

VULCANITE WORK.

Whilst this attachment is equally useful when confined to simple vulcanite cases, still to have the best results, the open tube should be attached to a palatal bar, or lingual wire, with solder, wherever possible.

What I mean by that is, if you want to make vulcanite saddles without having gold saddles, you have got to have a lingual bar, and you want a palatal strip in upper cases if the anterior teeth remain. These tubes can be attached to either that lingual bar by soldering, or to the palatal strip in the upper, by soldering, which will insure their proper alignment and their proper relation, after which the saddles and the rest of the case may be completed in vulcanite work. When used in this manner the proper position is securely sustained, and the teeth may then be attached with vulcanite. In this procedure the technique is the same as previously described. Where the case is to be made entirely of vulcanite, however, the open-tubes should be placed in position in the mouth and the bite and imprssion taken.

When the model has been obtained and mounted upon the articulator, the open-tubes should be removed, and a piece of 16 gauge iridio-platinum or clasp-metal wire, slightly flattened, and with each projecting end bent away from the open-tube and notched, should be securely soldered to the center of the tubes.

Each of the open-tubes should then be mounted to position on the model with cement, allowing a slight surplus to remain. When this has been hardened, the relation will be securely sustained, after which the case should be completed in the usual manner as for any vulcanite work.

A similar attachment, known as Gilmore's, is now being manufactured, and may be easily obtained by those who do not care to make it. The only difference in this attachment I am now giving you and Gilmore's, is, that Dr. Gilmore anchors his attachment to the one side of the tube instead of to the center, and it is much smaller. But you can make of 26 gauge clasp-metal this cylindrical open tube in a very few moments, and with a very small pair of pliers and a piece of 12 gauge wire will make the attachment for you in a very few minutes.

When the type or types of attachment thought to be best indicated have been selected, adapted, and completed, the casting process then offers splendid opportunity and great possibilities for the subsequent formation of the body of the fixture, and in this connection I believe that the successful casting of large pieces is but a question of the development of proper technique. I do not believe there is any limit to the size of the piece that we will be able to cast just as soon as we have developed the necessary technique for doing it.

In the construction of cast bases, if a good model of a high grade investment material is obtained, and if the wax base is carefully formed, made sufficiently thin and properly stiffened, the process offers every assurance of accuracy of adaptation and of strength, and the possibilities are unlimited. For all forms and sizes of saddles, or bases, coin gold seems to be especially adapted to cast work, and to afford all of the integral strength ordinarily demanded.

The third and last model is a little lower case where we are supplying missing teeth upon both sides. You will see here we have a third molar remaining upon one side, and, in order to get all the strength possible I have attached or united that third molar to the cuspid tooth, thereby obtaining greater strength in the attachment of the removable piece upon that side. Of course we would have done the same thing upon the other side had there been a posterior tooth, but none remained, consequently we used simply a slight extension there, just long enough to engage the tube, and you will observe upon this case that I have not placed a head on the end of the wire extending distally. This case was made up before I learned of the necessity for a head, so I call your attention to the fact that this case would not work very well now, because the left side would be forced backward, leaving a space which could be very easily overcome by soldering a little flat piece of metal to the wire forming a head. You can see how little room they take up in the mouth and how securely the anchorage is. This one I ask you especially not to replace because it has to go a certain way in order to get it right and it could be very easily bent out of position in taking it off and putting it on unless you knew just how to do it.

THE CHARACTER OF THE ADAPTATION OF AMALGAM TO THE WALLS OF CAVITIES ATTAINED BY PRESENT METHODS OF INSTRUMENTATION AND THE USE OF THE BEST KNOWN ALLOYS, AS INDICATED BY THE AIR PRESSURE TEST.*

BY WM. E. HARPER, D. D. S., CHICAGO.

It is the purpose of your essayist to present a report on the character of the adaptation of amalgam to the walls of cavities, as indicated by air pressure tests.

This report covers fifteen of the best known alloys at present on the market and the tests are selected from four hundred that have been made during the past fifteen months; and are considered sufficient in number, and of such average as to constitute a fair expression of our success in adapting amalgam to the walls of cavities.

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*Read before the Illinois State Dental Society, May, 1912.

The inconsistency of the results has been a revelation and mortification to me; and these reports are verified by another investigator after having made two hundred air tests.

I know of nothing new to add to our present fund of knowledge on the crushing stress and flow of alloys, so trust that I may be excused from considering these phases at the present time.

I have struggled earnestly, industriously, and I hope, intelligently, to secure reasonably uniform results in adaptation by the use of the various forms and sizes of instruments for packing, and with methods of instrumentation which include light and heavy hand pressure, mallet force, automatic mallet, and smooth ball burnishers.

My first tests were made in simple round cavities six millimeters in diameter and one mm. deep which required about five grains of alloy to fill.

Fillings in these cavities generally leaked at four to forty pounds, occasionally under four pounds, and the adaptation generally improved with the age of the filling, up to about six months, after which they would leak at lower pressures; with these observations, I abandoned the use of the simple cavity for amalgam tests, as an expanding alloy would be forced into more perfect adaptation, whereas in a complex cavity it might result in early leakage.

I then designed a mesio-disto-occlusal cavity which, in the difficulties of mixing and packing, proved to be the opposite extreme, as I found it difficult to fill such a cavity with one mix of some of the quick setting alloys under conditions which I considered necessary for careful tests. This cavity required about forty-four grains of alloy to fill; and in all the tests made leakage occurred under four pounds, with the exception of two or three which leaked at six and seven pounds.

I next designated a mesio-occlusal cavity with an occlusal retention, having a generally rounded outline and a depth of eighteen tenths of a millimeter. This cavity required about twenty-four grains of alloy to fill and leakage would occur anywhere from one to thirty pounds, and most commonly around the margin of the occlusal retention.

Dr. Black suggested to me that I make the occlusal retention a little deeper, which I did in making a second form of mesio-occlusal cavity. In this cavity the dovetail was typically angular in outline and the depth increased to twenty-six tenths of a millimeter. This cavity required about twenty-four grains of alloy to fill, and the best fillings would resist a higher air pressure than the last described mesio-occlusal cavity, but good results could only occasionally be duplicated, and leakage would occur at from one to forty pounds.

The two forms of mesio-occlusal cavities represent the average form and size of cavities for which amalgam is commonly used, and in my judgment, is the fairest test for shrinkage and expansion, and faults of adaptation, whether due to faulty technic or some quality of the alloy used.

These test tubes are made from steel. From their under surfaces a hole is drilled communicating with the axial and pulpal walls of the cavity. A screw is fitted to this hole, and the end of the screw forming the axial and pulpal walls is made smooth and slightly tapered to facilitate its removal without disturbing the filling; after which an airtight connection of the filled test tube is made with an apparatus which consists of an air tank, a pressure gauge, and glass water bowl. The air is admitted to the floor of the cavity to pass from there to the outer surface, if there be any leaks; the location of which is indicated by bubbles when the test tube is immersed in the water.

A solid matrix is used in filling these cavities, and if the tube is packed on a solid bench or table (as in my experimental work) I would consider the conditions much more favorable to perfect adaptation than when operating in the mouth.

Our amalgam technic and alloys were greatly improved as a result of the invention of the micrometer. But a non-shrinking and non-expanding filling may present numerous defects in adaptation around the walls, due either to some quality of the alloy itself, or faulty packing, and the micrometer would fail to indicate the defect.

The micrometer measures movement only, and not adaptation, a distinction important to notice; and the measure of adaptation appears to me to be the essential guide to the proper instrumentation, and development of the best possible alloys, and is a cardinal quality second to none.

Compared with the indications of the micrometer, the value of the air pressure test as a measure of adaptation is well illustrated by the results of the experimental work.

Uniformly perfect adaptation cannot be secured by the use of any of the non-shrinking and non-expanding alloys.

My experiments indicate that equally good results are attained by the use of some of the alloys that show a shrinkage of one point and an expansion of five to ten points, reports of which I present for your interpretation.

Satisfactory apparatus for measuring crushing stress and flow having been provided for in the dynamometer, the invention of the air pressure test opens a new field for investigation, the practical value of which the future alone can tell, as the inconsistency of the results is beyond my ability to explain at this time.

The air pressure test is a certain measure of any movement that may take place between the filling material and the walls of the cavity to disturb its adaptation, and places at our disposal the means by which we may develop a more complete understanding of the necessary instrumentation and amalgam technic, and may also be the means of improving our alloys.

As recently reported, after careful investigation, amalgam work represents about seventy to seventy-five per cent of the work of the average practitioner; therefore improvement along these lines would seem to me to be the most important practical operative question before the profession today, when the results we attain are known.

The crushing stress and flow being reasonably well provided for in the high grade alloys at present on the market, adaptation becomes the most important requirement for a perfect filling, but at the same time seems to be the most uncertain quality, and is probably the most common source of our failures irrespective of the ability of the operator.

For purposes of comparison, I have made numerous duplicate tests on the micrometer and found the results generally uniform if the weights and general technic remained the same.

When I started this experimental work, it was with the expectation that I would find on the market some alloys with which a skilled operator could secure reasonably uniform results; and, failing in this, I then endeavored to learn the cause of this variation by undertaking a wide range of experimental work, but regret to say that I have accomplished nothing yet that would justify a conclusion, except in a negative sense. The one reason of my acceptance of the honor of your committee's invitation was, that the consideration and discussion of these reports by this society might lead to valuable advice and suggestions for my future guidance; in which event I shall be richly rewarded.

The adaptation of my first experimental fillings proved to be very faulty, and examination of the fillings with a magnifying glass (after removal of the matrix) revealed many air spaces over the entire surface and particularly around the margins; and I found it practically impossible to eliminate the imperfections until I abandoned the use of the large pluggers (twenty tenths of a millimeter or larger) for the general packing, confining their use to the simple flattening of each piece of amalgam, then packing the entire surface with a rectangular plugger of the approximate size of twelve by eighteen tenths of a millimeter with all the force of the pen grasp, and until no crepitus could be felt under the force of the plugger, paying particular attention around the walls and margins, and confining my efforts to such a technic as would be possible in the mouth.

I am willing to go on record in this statement—that amalgam does not and will not spread into adaptation, but must be driven into contact and remain undisturbed during the subsequent packing. It is my conviction that the requirements for a good amalgam filling will be found just as exacting and similar in certain essential details as for gold, although requiring much less time to accomplish, when understood.

If my knowledge of amalgam was confined to the results of my experimental work, I could not be restrained from making an unconditional condemnation of it as a permanent filling material, but its long career of usefulness, and clinical experience has shown it to be of inestimable value as a tooth restorer and saver; and it is questionable in the minds of many whether it is second to gold in this respect, when we consider the inaccessibility and extent of a large per cent of the cavities for which it is used.

It is the only available filling material that can be depended upon for reasonably permanent results in its proper sphere of usefulness, that is within the financial reach of seventy to ninety per cent of the people.

This clinical record would seem to indicate that the adaptation of amalgam when packed into cavities in the teeth is more generally perfect than when packed into steel test tubes, and I believe that it is safe to say that the rougher surfaces of the walls of the cavities in the teeth serve the same purpose as the serrations of the plugger by holding the amalgam under the packing force, a condition insuring better condensation and adaptation and the development of a greater resistance to crushing stress and flow.

It is also possible that a filling, packed into a cavity with the maximum force, exerts considerable pressure against the walls and brings into action the elasticity of the dentin and this would allow certain walls to adjust themselves to minute movement (shrinkage or expansion) of the filling. The shrinkage of one point or the expansion of four or five points, indicated on the micrometer, would be materially reduced in cavities in the teeth, because of the difference in form, and bulk, and the unyielding character of the walls of the steel test tube, which are, I judge, conditions that must be considered in arriving at a scientific conclusion.

The amount of alloy used for filling a micrometer test tube is about sixty grains, and the amount required for an average large cavity in the teeth is about twenty grains and this would reduce the movement to one-third that shown on the micrometer.

The practical value of this method of testing the serviceability of amalgam fillings in the teeth is not yet established nor do we know the pounds air pressure the adaptation of a filling to the cavity walls must resist to remain permanent under the conditions of the mouth. However, I feel confident that this test is the best and most complete guide, at the present time, to the development of our manipulative skill and to the further improvement of our alloys, as the failures so commonly due to faulty packing or technic can not be detected by the micrometer, whereas the air pressure test will locate such faults in any filling material that may be used.

The micrometer is useless if we desire to test our gold fillings or inlays and for the same reason it would be useless for testing those amalgam fillings made from alloys that neither shrink nor expand.

I shall be much interested in the opinions of the profession on these points and trust that they may be freely expressed so that the future experimental work may be made more conclusive and valuable and conform more perfectly with the conditions with which we must contend in the mouth.

The trend of social and economic conditions is such as to justify the belief that a large proportion of our patients will of financial necessity find themselves dependent upon this material to save and restore to usefulness the posterior teeth.

Measurements of the diameters of the pluggers used are given in tenths of a millimeter.

Movement as recorded by the micrometer is given in points, one point (1) meaning one ten-thousandth of an inch. The record shows the maximum and minimum movement.

Those alloys containing a large per cent of tin and generally known by their easy mixing, and slow setting qualities, are not reported as the tests show uniform leakage at less than one pound, and I did not consider such fillings strong enough to retain their form when exposed to the force of the bite.

Alloy, Copper amalgam. (Tube T.) Mesio-occlusal cavity. Operator, W. E. H. Weight: 56 grains. Heated until globules of mercury appeared all over the surface. Mixed in mortar one and a half minutes; hand one minute. Made a very plastic and somewhat sticky mass from which 8 grains of mercury was removed during the kneading.

Packed with a 2 millimeter round, flat, serrated faced plugger, followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger packing in the center of the mass first, then to and around the walls thoroughly. Mercury worked to the surface and was removed as it appeared. This alloy sets slowly.

First record six hours after packing leaked at............	10 lbs.
Second record three days after packing leaked at..........	10 ozs.
Last record five days after packing leaked at..............	10 ozs.

Alloy, Copper amalgam. (Tube L.) Mesio-occlusal cavity. Operator, W. E. H. Weight: 56 grains. Mixing and packing the same as for Tube T, except that twelve grains of mercury was removed during the kneading.

First record six hours after packing leaked at............	10 ozs.
Second record three days after packing leaked at..........	8 ozs.
Last record five days after packing leaked at.............	8 ozs.

Alloy A. (Tube W.10.) Micrometer test.

First record 357, two hours after packing.

Second test 357, sixty days after packing.

Last test 357, one hundred and eighty days after packing. No movement.

Alloy A. (Tube 14.) Mesio-disto-occlusal cavity. Operator, W. E. H. Weights: Alloy, 48 grs.; mercury, 66 grs.; mixed in mortar two minutes; hand two minutes. Made a smooth plastic mass from which nine grains of mercury was expressed during the kneading.

Packed with a 3 millimeter round, flat, serrated faced plugger, followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger, packing the center of the mass first, then to and around the walls very thoroughly, and with all the force of the pen grasp. Sets moderately quickly.

First record one hour and a half after packing leaked at.... 14 ozs.

Second test four days after packing leaked at............. 8 ozs.

Last test ninety days after packing leaked at..........2 lbs. 8 ozs.

Alloy A. (Tube T.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in the mortar two minutes; hand two minutes. Made a smooth plastic mass from which five grains of mercury was expressed during the kneading.

Packing was the same as for Tubes W.10 and 14.

First record two hours after packing leaked at............ 7 lbs.

Second record three days after packing leaked at.......... 1 lb.

Last test ninety days after packing leaked at.............. 10 ozs.

Alloy B. (Tube W.9.) Micromoter test.

First record 361, two hours after packing.

Second record 360, nine days after packing.

Third record 358, two hundred days after packing.

Last record 359, three hundred days after packing.

Alloy B. (Tube 21.) Mesio-disto-occlusal cavity. Operator, W. E. H. Weights: Alloy, 48 grs.; mercury, 66 grs.; mixed in mortar two minutes; hand two minutes. Made a smooth plastic mass from which seven grains of mercury was expressed during the kneading.

Packed with a 3 millimeter round, flat, serrated faced plugger, followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger, packing the center of the mass first, then to and around the walls very thoroughly, and with all the force of the pen grasp; mercury working to the surface and was removed. The mass showed springiness during the packing and sets slower than some of the high-grade alloys.

First record one hour and a half after packing leaked at.... 14 ozs.
Second record eight days after packing leaked at.....1 lb. 2 ozs.
Last record ninety days after packing leaked at......2 lbs. 10 ozs.

Alloy B. (Tube G.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, two minutes; hand two minutes and a half. Made a smooth plastic mass from which five grains of mercury was expressed during the kneading.

Packing was the same as for Tubes W.9 and 21.

First record two hours after packing leaked at............ 2 lbs.
Second record nine days after packing leaked at........... 14 ozs.
Last record ninety days after packing leaked at........... 1 lb.

Alloy C. (Tube W.6.) Micrometer test.

First record 344, two hours after packing.

Second record 345, ninety days after packing.

Last record 344, two hundred and forty days after packing.

Alloy C. (Tube 8.) Mesio-disto-occlusal cavity. Operator, W. E. H. Weights: Alloy, 45 grs.; mercury, 55 grs.; mixed in mortar two minutes; hand three minutes. Made a smooth plastic mass from which six grains of mercury was expressed during the kneading.

Packed with a 3 millimeter round, flat, serrated faced plugger followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger, packing the center of the mass first, then to and around the walls thoroughly and with all the force of the pen grasp. Mercury working to the surface during the packing and was removed. The alloy sets slowly.

First record two hours after packing leaked at............ 10 ozs.
Second record one day after packing.................... 7 lbs.
Third record forty days after packing leaked at........... 14 ozs.
Last record one hundred and twenty days after packing.... 3 lbs.

Alloy C. (Tube Z.) Mesio-occlusal cavity. Operator, W.

E. H. Weights: Alloy, 24 grs.; mercury, 35 grs.; mixed in mortar, one and a half minutes; hand one and a half minutes. Six grains of mercury was removed during the kneading. Packing the same as for Tube 8.

First record two hours after packing leaked at	1 lb.
Second record three days after packing leaked at	14 ozs.
Last record sixty days after packing leaked at	14 ozs.

Alloy D. (Tube W. 3.) Micrometer test.

First record 329, two hours after packing.

Second record 327, twenty days after packing.

Last record 328, one hundred and twenty days after packing. Shrinkage 2 pts.

Alloy D. (Tube J.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, two minutes; hand two minutes. Made a smooth, plastic and somewhat sticky mass from which six grains of mercury was expressed during the kneading.

Packed with a 3 millimeter round, flat, serrated faced plugger followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger, packing the center of the mass first, then to and around the walls very thoroughly; a little mercury working to the surface and was removed.

First record two hours after packing leaked at	5 lbs.
Second record three days after packing leaked at	2 lbs.
Last record seventy days after packing leaked at	8 ozs.

Alloy D. (Tube I.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, two minutes; hand two minutes. From which six grains of mercury was expressed during the kneading.

Packing was the same as for tubes W.3 and J.

First record two hours after packing leaked at	10 lbs.
Second record two days after packing leaked at	8 lbs.
Third record thirty days after packing leaked at	30 lbs.
Last record one hundred and thirty days after packing	10 lbs.

Alloy E. (Tube W.4.) Micrometer test.

First record 416, three hours after packing.

Second record 418, thirty days after packing.

Last record 426 two hundred and ten days after packing.

Alloy E. (Tube I.) Simple round cavity. Operator, W. E. H. Weights: Alloy, 5 grs.; mercury, 7 grs.; mixed in mortar, one and a half minutes; hand one and a half minutes. Expressed one grain of mercury during the kneading. Made a smooth plastic mass.

Packed with a 2 millimeter round, flat, serrated faced plugger, packing in the center of the mass first, then to and around the walls, with all the force of the pen grasp. The alloy sets quickly.

First record one hour after packing leaked at.............. 20 lbs.
Second record three days after packing leaked at.......... 3 lbs.
Third record fifteen days after packing leaked at.......... 9 lbs.
Last record one hundred and thirty days after packing no leak at .... 30 lbs.

Alloy E. (Tube I.) Mesio-disto-occlusal cavity. Operator, W. E. H. Weights: Alloy, 48 grs.; mercury, 66 grs.; mixed in mortar two minutes; hand two minutes.

Packing same as for the simple cavity Tube I.

First record one hour after packing leaked at............. 4 lbs.
Second record twelve days after packing leaked at......... 2 lbs.
Third record thirty days after packing leaked at........... 5 lbs.
Last record one hundred and twenty days after packing.... 4 lbs.

Made a duplicate test as above with same result.

Alloy E. (Tube 24.) Mesio-disto-occlusal cavity. Operator, W. E. H. Weights, mixing and packing the same as for Tube 1 complex cavity.

First record two hours after packing leaked at............ 6 ozs.
Second record sixty days after packing leaked at.......... 1 lb.
Last record one hundred and twenty days after packing.... 12 ozs.

Alloy G. (Tube W.9.) Micrometer test.

First record 400.5, one hour after packing.

Second record 401, nineteen days after packing.

Third record 404, forty days after packing.

Last record 407, three hundred days after packing.

Alloy G. (Tube 10.) Mesio-disto-occlusal cavity. Operator, W. E. H. Weights: Alloy, 48 grs.; mercury, 66 grs.; mixed in mortar two and a half minutes; hand two and a half minutes. Made a very clean working, smooth, plastic mass from which four grains of mercury was expressed during the kneading.

Packed with a 3 millimeter round, flat, serrated faced plugger, followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger, packing the center of the mass first, then to and around the walls, thoroughly and with all the force of the pen grasp.

First record one hour after packing leaked at	1 lb.	2 ozs.
Second record six days after packing leaked at		14 ozs.
Third record forty days after packing leaked at	2 lbs.	4 ozs.
Last record one hundred days after packing leaked at	1 lb.	8 ozs.

Alloy G. (Tube E.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, two minutes; hand, two minutes; three grains of mercury was expressed during the kneading.

Packing was done the same as for Tube 10.

First record, one hour and a half after packing leaked at	9 lbs.
Second record, seven days after packing leaked at	1 lb. 2 ozs.
Last record ten days after packing leaked at	10 lbs.

Alloy G. (Tube FF.) Mesio-occlusal cavity. Operator, W. E. H. Weights, mixing and packing was the same as for tube E.

First record, one hour and a half after packing leaked at	12 lbs.
Second record, two days after packing leaked at	1 lb.
Third record, twenty days after packing leaked at	25 lbs.
Last record, one hundred and twenty days after packing leaked at	4 lbs.

Alloy G. (Tube Q.) Mesio-occlusal cavity. Operator, W. E. H. Weights, mixing and packing the same as for tubes FF. and E.

First record, one hour and a half after packing leaked at	4 lbs.
Second record one day after packing leaked at	3 lbs.
Third record six days after packing leaked at	7 lbs.
Last record ninety days after packing leaked at	1 lb.

Alloy F. (Tube W.3.) Micrometer test.

First record 419. One hour and a half after packing.

Second record 420. Thirty days after packing.

Third record 421. Ninety days after packing.

Last record 422. One hundred and twenty days after packing.

Alloy F. (Tube D.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, one and a half minutes; hand, one and a half minutes. Made a smooth plastic mass from which five grains of mercury was expressed during the kneading.

Packed with a 3 millimeter round, flat, serrated faced plugger, followed by packing with a 1.7 mm. ball burnisher and a 1.2x1.8 mm. rectangular, flat, serrated faced plugger, over the mass and around the walls without any attention to order.

First record, one hour and a half after packing leaked at.... 11 lbs.
Second test, ten days after packing leaked at .... 7 lbs.
Third record, sixty days after packing leaked at .... 25 lbs.
Last record, ninety days after packing leaked at........... 1 lb.

Alloy F. (Tube Z.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, one and a half minutes; hand, one and a half minutes; expressed four grains of mercury.

Packed with 3 millimeter round, flat, serrated faced plugger, followed by a 1.5 mm. triangular, flat, serrated faced plugger, center of the mass to and around the walls very thoroughly, but with less than the usual pressure as the mass was more plastic than usual, when the packing was commenced, and a considerable amount of mercury worked to the surface and was removed.

First record, one hour and a half after packing leaked at.... 15 lbs.
Second record, eight days after packing leaked at........ 11 lbs.
Third record, sixty days after packing leaked at......... 25 lbs.
Last record one hundred and twenty days after packing..... 5 lbs.

Alloy F. (Tube U.) Mesio-occlusal cavity. Operator, W. E. H. Weights, mixing and packing same as for tube Z.

First record, one hour and a half after packing leaked at..1 lb. 8 ozs.
Second record, five days after packing leaked at........... 14 ozs.
Last record, sixty days after packing leaked at............ 8 ozs.

Alloy F (Tube CC.) Mesio-occlusal cavity. Operator, W. E. H. Weights, mixing and packing the same as for tube Z.

First record, one hour and a half after packing leaked at.... 4 lbs.
Second record, three days after packing leaked at.......... 7 lbs.
Last record, one hundred and twenty days after packing.... 1 lb.

Alloy H. (Tube W.1.) Micrometer test.
First record 230. One hour after packing.
Second record 229. Three days after packing.
Third record 232. Thirty days after packing.
Third record 243. One hundred and fifty days after packing.
Last record 247. Three hundred days after packing.

Alloy H. (Tube W.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, one and a half minutes; hand, one and a half minutes; made a clean working, plastic mass from which three grains of mercury was expressed during the kneading.

Packed with a 3 millimeter round, flat, serrated faced plugger, followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger, packing the center first, then to and around the walls very thoroughly and with all the force of the pen grasp, a little mercury working to the surface was removed.

First record, two hours after packing leaked at............ 15 lbs.
Second record, two days after packing leaked at........... 8 lbs.
Last record, fifty days after packing leaked at............ 35 lbs.

Alloy H. (Tube K.) Mesio-occlusal cavity. Operator, W. E. H. Weights, mixing and packing the same as for Tube W.

First record, one hour after packing leaked at............. 13 lbs.
Second record, three days after packing leaked at......... 3 lbs.
Last record sixty days after packing leaked at............ 4 lbs.

Alloy H. (Tube F.) Mesio-occlusal cavity. Operator, W. E. H. Weights and mixing the same as for tubes W. and K.

Packed with a 3 millimeter round, flat, serrated faced plugger, followed with a 1.8 mm. round, convex, serrated faced plugger very thoroughly in the center first, then to and around the walls.

First record two hours after packing leaked at........... 8 lbs.
Second record sixty days after packing leaked at........... 15 lbs.
Last record seventy-five days after packing leaked at....... 12 lbs.

Alloy H. (Tube E.) Mesio-occlusal cavity. Operator, W. E. H. Weights and mixing the same as for tubes F., W. and K.

Packed with a 2 millimeter round, convex, smooth faced plugger, center to and around the walls, followed with a 1.2 mm. ball burnisher over each piece of amalgam and around the walls thoroughly.

First record, three hours after packing leaked at........... 8 lbs.
Second record, seven days after packing leaked at.......... 1 lb.
Last record, thirty days after packing leaked at........... 1 lb.

Alloy H. (Tube GG.) Mesio-occlusal cavity. Operator, W. E. H. Weights, mixing and packing the same as for tube E.

First record, two hours after packing leaked at............ 2 lbs.
Second record, four days after packing leaked at........... 4 lbs.
Last record, thirty days after packing leaked at.........1 lb. 8 ozs.

Alloy H. (Tube C.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, two minutes; hand, two minutes; no mercury removed and packing was commenced as soon as the mass showed signs of setting.

Packed with a 2.5 mm. round, convex, serrated faced plugger, followed with a 1.8 mm. ball burnisher, thoroughly over each piece of amalgam.

First record, four hours after packing leaked at........... 2 lbs.
Second record, seven days after packing leaked at.......1 lb. 4 ozs.
Third record, thirty days after packing leaked at........... 7 lbs.
Last record, sixty days after packing leaked at............. 2 lbs.

Alloy I. (Tube W.12.) Micrometer test.

First record, 360. One hour after packing.
Second record 359. Two days after packing.
Third record 359. One hundred and twenty days after packing.
Last record 360. Two hundred and twenty days after packing.

Alloy I. (Tube R.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, one and a half minutes; hand, one and a half minutes; made in a clean working, plastic and cohesive mass; four grains of mercury was removed during the kneading.

Packed with a 3 millimeter round, flat, serrated faced plugger, followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger, packing the center first, then to and around the walls until no crepitus could be felt under the force of the pen grasp. This alloy packed solid.

First record, two hours after packing leaked at.........3 lbs. 8 ozs.
Second record, fourteen days after packing leaked at........ 3 lbs.
Last record, twenty days after packing leaked at........... 1 lb.

Alloy I. (Tube GG.) Mesio-occlusal cavity. Operator, W. E. H. Weights, mixing and packing the same as for tube R.

First record, two hours after packing leaked at........... 14 lbs.
Second record, one day after packing leaked at........... 13 lbs.
Third record, thirteen days after packing leaked at......... 20 lbs.
Last record, thirty days after packing leaked at........... 30 lbs.

Alloy I. (Tube B.) Mesio-occlusal cavity. Operator; W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, one and a half minutes; hand, one and a half minutes; two grains of mercury was expressed.

Packed the same as for tubes GG. and R., except that the mass was more plastic than usual when the packing commenced, and remained so during the packing, the surplus mercury working to the surface was removed.

First record, two hours after packing leaked at........... 9 lbs.
Second record, thirty days after packing leaked at......... 10 lbs.
Last record, forty days after packing leaked at............ 12 lbs.

Alloy I. (Tube X.) Mesio-occlusal cavity. Operator, W. E. H. A duplicate test as for tube GG. Made with studied exactness.

First record, two hours after packing leaked at............ 2 lbs.
Last record, five days after packing leaked at...........1 lb. 8 ozs.

Alloy J. (Tube W.11.) Micrometer test.

First record 322. Two hours after packing.

Second record 321. Five days after packing.

Last record 321. One hundred and twenty days after packing.

Alloy J. (Tube U.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, one and a half minutes; hand, one and a half minutes; five grains of mercury was removed during the kneading; made a smooth, coherent mass.

Packed with a 2 millimeter round, flat, serrated faced plugger, followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger, packing the center of the filling first, then to and around the walls, thoroughly, mercury appearing on the surface during the packing and was removed.

First record, two hours after packing leaked at............. 2 lbs.
Second record, seven days after packing leaked at......... 3 lbs.
Last record, twelve days after packing leaked at........... 1 lb.

Alloy J. (Tube N.) Mesio-occlusal cavity. Operator, W. E. H. Weights, mixing and packing the same as for tube U. (A duplicate test.)

First record, two hours after packing leaked at........... 2 lbs.
Second record, six days after packing leaked at........... 15 lbs.
Third record, twenty-five days after packing leaked at..... 28 lbs.
Last record, ninety days after packing leaked at........... 1 lb.

Alloy K. (Tube W.2.) Micrometer test.
First record 322. Two hours after packing.
Second record 322. Sixteen days after packing.
Third record 322. Ninety days after packing.
Last record 322. Two hundred days after packing.

Alloy K. (Tube X.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, one and a half minutes; hand, one and a half minutes; no excess mercury removed. This alloy amalgamated readily and made a smooth, plastic mass, which adhered to the mortar and sets very quickly.

Packed with a 2 millimeter round, flat, serrated faced plugger, followed with a rectangualr 1.2x1.8 mm. flat, serrated faced plugger, packing each piece of alloy in the center first, then to and around the walls, the mass was rather stiff toward the completion of the filling.

First record, two hours after packing leaked at............ 1 lb.
Second record, ten days after packing leaked at............ 8 ozs.

Alloy K. (Tube B.1.) Mesio-occlusal cavity. Operator, W. E. H. Weights, mixing and packing the same as for tube X. (A duplicate test.)

First record, two hours after packing leaked at........... 14 lbs.
Second record, three days after packing, no leak at........ 25 lbs.
Last record, thirty days after packing, no leak at........... 25 lbs.

Alloy L. (Tube W.8.) Micrometer test.
First record, 341. Two hours after packing.
Second record 342. Four days after packing.
Third record 341. Seventy days after packing.
Last record 342. One hundred and twenty days after packing.

Alloy L. (Tube D.1.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, one and a half minutes; hand, one and a half minutes; made a smooth and very plastic mass (but not sloppy), from which six grains of mercury was expressed. The mix had started to stiffen when the packing was commenced.

Packed with a 2 millimeter round, flat, serrated faced plugger, followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger. Each piece of alloy was thoroughly packed by working from the center of the mass to and around the walls. A slight amount of mercury worked to the surface and was removed during the packing.

First record, two hours after packing, no leak at........... 10 lbs
Second record, one day after packing, leaked at............ 14 lbs.
Third record, ten days after packing, leaked at............ 30 lbs.
Fourth record, sixty days after packing, leaked at.......... 18 lbs.
Last record, one hundred and twenty days, leaked at....... 22 lbs.

I succeeded in making six good (duplicate) tests followed by three poor records, which I present:

Alloy L. (Tube A.1.)

First record, two hours after packing, no leak at.......... 10 lbs
Second record, seven days after packing, no leak at......... 30 lbs.
Third record, forty days after packing, no leak at........ 30 lbs.
Last record, one hundred and twenty days, no leak at...... 30 lbs.

Alloy L. (Tube B.L.)

First record, two hours after packing, no leak at........... 10 lbs
Second record, three days after packing, no leak at......... 30 lbs.
Third record, forty days after packing, no leak at......... 30 lbs.
Last record, one hundred and twenty days, no leak at....... 30 lbs.

Alloy L. (Tube F.1.)

First record, two hours after packing, leaked at........... 12 lbs.
Second record, two days after packing, no leak at......... 20 lbs.
Third record, thirty days after packing, no leak at......... 26 lbs.
Last record, one hundred and twenty days after packing, no leak at .... 30 lbs.

Alloy L. (Tube B.1.)

First record, two hours after packing, leaked at............ 9 lbs.
Second record, three days after packing, leaked at......... 8 lbs.
Last record, thirty days after packing, leaked at........... 14 lbs.

Alloy L. (Tube U.)

First record, two hours after packing, leaked at............ 5 lbs.
Second record, two days after packing, leaked at......... 15 lbs.
Third record, five days after packing, leaked at........... 18 lbs.
Last record, thirty days after packing, leaked at........... 8 lbs.

Alloy L. (Tube C.1.)

First record, two hours after packing, leaked at............ 1 lb.
Last record, three days after packing leaked at............ 8 ozs.

Alloy L. (Tube O.)

First record, two hours after packing, leaked at .... 6 lbs.
Second record, two days after packing leaked at......... 4 lbs.

Third record, five days after packing leaked at........... 20 lbs.
Fourth record, thirty days after packing, leaked at........ 14 lbs.
Last record, one hundred and twenty days after packing, leaked at .... 28 lbs.

Alloy L. (Tube 10.) Mesio-disto-occlusal cavity.

First record, two hours after packing, leaked at........... 1 lb.
Second record, three days after packing, leaked at......... 1 lb.
Last record, nine days after packing leaked at............. 8 ozs.

Alloy M. (Tube N.) Micrometer test.
First record 315. Two hours after packing.
Second record 315. Ten days afte rpacking.
Last record 315. Thirty days after packing.

Alloy M. (Tube E.l.) Mesio-occlusal cavity. Operator, W. E. H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, one and a half miutes; hand, one and a half minutes; made a smooth and somewhat sloppy mix from which eight grains of mercury was expressed.

Packed with a 2 millimeter round, flat, serrated faced plugger, followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger, packed each piece of alloy thoroughly and with all the force of the pen grasp, working from the center to and around the walls. The mixing qualities of this alloy seemed to be very good.

First record, two hours after packing, leaked at .... 8 ozs.
Last record, two days after packing, leaked at............. 8 ozs.

Alloy M. (Tubes E. and C. l.) Mesio-occlusal cavities. Operator, W. E. H. Weights, mixing and packing the same as for tube E.1. (Duplicate tests made with care.)

Alloy M. (Tube E.)

First record, two hours after packing, leaked at............ 8 ozs.
Last record, one day after packing leaked at.............. 8 ozs.

Alloy M. (Tube C.1.)

First record, two hours after packing, leaked at............ 8 ozs.
Last record, three days after packing leaked at............ 8 ozs.

Alloy N. (Tube Z.) Micrometer test.
First record 346. Two hours after packing.
Second record 345. One day after packing.
Last record 346. Forty days after packing.

Alloy N. (Tube Z.) Mesio-occlusal cavity. Operator, W. E.

H. Weights: Alloy, 24 grs.; mercury, 33 grs.; mixed in mortar, one and a half minutes; hand, one and a half minutes; amalgamated slowly and made a smooth, plastic, coherent mass, from which five grains of mercury was expressed. The mass had begun to stiffen when the packing was commenced.

Packed with a 2 millimeter round, flat, serrated faced plugger, followed with a rectangular 1.2x1.8 mm. flat, serrated faced plugger, working from the center to and around the walls, very thoroughly and with all the force of the pen grasp.

First record, two hours after the packing, leaked at........ 1 lb.
Last record, one day after the packing, leaked at............ 1 lb.

Alloy N. (Tubes X. and Y.) (Duplicate tests) worked with exactness.

(Tube X.)

First record, two hours after packing, leaked at............ 1 lb.
Last record, two days after packing, leaked at............. 1 lb.

(Tube Y.)

First record, two hours after packing, leaked at............. 1 lb.
Last record, three days after packing, leaked at............. 1 lb.

Made six other tests with this alloy, using different forms of instruments, and a different technic, but failed to get any better results.

FILLING ROOT CANALS WITH AN IMPROVED PARAFFIN COMPOUND.*

BY HERMAN PRINZ, A. M., M. D., D. D. S., ST. LOUIS, MO.

One of the most subtile operations in the routine procedure of conservative dentistry is the filling of root canals. In the great majority of cases, the successful completion of this operation requires an extraordinary amount of dexterity and an over-abundance of patience. Aside from the intricate technical requirements which are primarily based on a thorough knowledge of dental anatomy and which can only be mastered by diligent practice, the materials employed for such purposes are of equal importance. Regarding the physical and chemical nature of the various root filling materials, apparently the greatest diversity of opinion exists. Only recently a writer on this subject enumerated over two hundred and fifty odd compounds and methods of their application. This tohu-wabohu is largely the result of empirical practice based on *a priori* conceptions. Comparatively little experimental work has been done, clinical observations alone have been the guide posts for this operation. With the progress of our knowledge of dental pathology and its recent addition, bacteriology, the demands on the nature and functions of the substances employed as root canal obturators have materially increased, and, consequently, what at one time was considered a perfect root filling, as for instance, a plug made of leaf gold, is today considered wholly inadequate for the purpose.

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*Read before the St. Louis Dental Society, Sept. 2nd, 1912.

HISTORY OF FILLING ROOT CANALS.

In the early records of the practice of conservative dentistry, i. e., in the works of Fauchard (1728), Bourdet (1757), Hunter (1778), and others, we are informed that whenever a "nerve" in a tooth is exposed and diseased, it should be destroyed by the actual or the potential cautery, which, however, as the closely observing Hunter remarks: "is not always possible." These early authors also referred to the medicinal treatment of the "fangs;" the French dentists being especially partial to the use of "essence de giroffle (oil of cloves)," and Hunter prophetically emphasized antiseptic procedures of a somewhat similar nature as being essential for the future preservation of the tooth. Cotton wool, saturated with an essential oil, was usually sealed into the root canal prior to the final filling of the tooth cavity. The use of soft metals for such purposes, i. e., gold, lead, or tin, was instituted later. It is quite certain that the better class of American dentists practiced the filling of root canals at the beginning of the nineteenth century. In 1826, the international Koecker stated that, "the practice of dentistry has reached a state of development in the United States which is higher than in any other part of the world, although very little is published by American dentists." Fortunately, certain proofs are available to the student of dental history which makes it plain that root filling must have been a well-known procedure to the high-class practitioners in those days, for we find among other data a bill rendered in 1824 by Edward Hudson, a well-known Irish dentist, who practiced in Philadelphia from 1805 to 1833, where he speaks of "stopping the cavity of one tooth from the end of its root with gold." The latter material was in common use for such work up to the early seventies of the last century and such men as Maynard, Barker, Dunning, Forster, Westcott, Palmer, McKellops, and a host of others, were strong advocates of its special fitness for this purpose. In 1849, the once famous Hill's stopping was introduced as a general filling material and soon was advocated as a suitable root filling compound. In the early seventies it was succeeded by a solution of gutta percha base plate in chloroform, which, however, was quickly modified by employing a solid cone of gutta percha in conjunction with this solution. As a close second, oxychlorid of zinc cement, which was introduced in 1856 by Sorel and familiarly known as Houghton's or Roberts' os artificial, was highly prized by many operators as being the most suitable material for the permanent obliteration of root canals. Apparently, the closely observing practitioners of the past were aware of the fact that a root canal deprived of its natural contents, i. e., the pulp, must be filled with some substance in order to prevent the seepage of serum and the subsequent pathologic disturbance arising therefrom. This same rationale, with slight modifications, forms the basis of our modern conception of filling root canals.

THE OBJECT OF FILLING ROOT CANALS.

The primary object of filling a root canal is to replace as perfectly as possible the artificially or pathologically destroyed pulp with a solid, unchangeable and inert substance. If the canal is not filled, serum will seep into it from the apical tissues. The serum furnishes nutrient material for the microorganisms present in the tubuli of a primarily infected root canal. In a sterile canal, endogenous infection may occur *via* the circulation as Faisztl (1) has recently shown experimentally. This same mode of infection may take place in cases where the pulp of a sound tooth has died as a result of some traumatic insult. In both instances, secondary infection of the pericementum with its sequences will usually occur in due time. The specific materials used as root canal obturators should, according to Miller, Dunning and others, possess the following qualifications: 1) The material should be non-putrefactive; 2) It should possess permanent antiseptic qualities; 3) It should be easy of introduction; 4) It should not irritate the soft structures beyond the foramen; 5) It should not discolor the tooth substance; 6) It should not be porous and remain unchanged as to form; 7) It should, in case of necessity, be easy of removal; 8) As Mayrhofer has suggested, it should seal the dentinal tubuli and the apical foramina hermedically against bacterial invasion, and 9) if possible, it should offer some resistance to the roentgen rays so as to furnish an opaque shadow picture. To enumerate all the substances which have been advocated at one time or another as root filling materials and to criticize their respective usefulness is entirely outside of the scope of this paper. Merely to mention the most important groups of materials we may state that silk or cotton, either raw or purified, medicated or carbonized; asbestos; the cements, metals in the form of wire, foil, or as amalgams; gutta percha in its pure form or in its many modifications; wood points; semi-solid pastes, principally composed of zinc oxid combined with various antiseptics, and certain diverse substances, i. e., salol, paraffin, waxes, resinous compounds, balsams, etc., have been used with more or less success. Clinical observations and laboratory experiments have demonstrated that out of this great mass of suggested materials only a very few substances comply with the above demnads.

Silk and cotton in their pure state, or in their many modifications, have always been failures as root filling materials. Among the various cements, the oxychlorid of zinc has been the most successful compound and such skilled operators as Jenkins, E. Kells, Jr., Ottolengui, and others, recommend it as being practically the most suitable material for this purpose. In general, the introduction of cements into tortuous canals is very difficult, they are irritants if forced beyond the foramen and their complete removal from a root canal is often impossible. Metals, on account of their imperfect adaptation and natural resistance to manipulation in the minute canals have been practically discarded. Gutta percha, in the form of cones, in conjunction with its solution in chloroform or some of the essential oils and covered with zinc chlorid cement, as Webster (2) and Cook (3) have shown experimentally, are practically moisture proof, and, to some extent, prevent the ingress of bacteria. Cook (4) is rather partial to a chloro-percha solution, claiming that a slow liberation of active chlorin, which acts as a powerful antiseptic, takes place in a root canal filled with this compound, while other practitioners prefer a solution of gutta percha in eucalyptol or in any one of its isomers, i. e., cajuputol, myrtol, cineol, etc.

Laboratory tests made with these compounds in glass tubes and in extracted teeth have demonstrated that, in certain cases, a water-tight filling can be made. At various times test fillings have been made with the gutta percha preparations before societies and it was invariably found that less than 50 per cent of the fillings could be called "good" root fillings. Gutta percha in its many modifications or combined with the cements is principally employed in the United States and Canada as a root filling material, while in Europe semi-solid pastes are at present highly valued for such purposes. Experimental work with the latter compounds has proved that they are valueless, they prevent the ingress of moisture only temporarily. Wood points, artificially prepared, or in the form of natural thorns or as charcoal points, are porous and, consequently, are useless substances. Salol, when melted into a root canal, will be absorbed within a short time. Some of the balsams, i. e., Canada balsam, balsam of Peru, Balsamo del Deserto, concentrated solutions of sandarac and other resinous compounds, are still lauded by many practitioners, especially balsam of Peru which has lately been recommended again. The solid resins possess many advantages over other compounds; their successful introduction into fine root canals, however, is very difficult. Of the various waxes, the insoluble hard paraffin has given most excellent results and it is about this last substance that the following discussion is concerned.

HISTORY OF FILLING ROOT CANALS WITH PARAFFIN.

The solid and liquid paraffins occupy quite an important place in the various branches of medicine. In dermatology, they are principally employed as vehicles for heavy metallic salts and oxidyzing substances, in the preparation of ointments and for subcutaneous injections. In 1891 to '96, Corning, of New York, published a series of articles in which he advocated the hypodermic injection of paraffin for surgical purposes. Gersuny, of Vienna, in 1900, employed paraffin for prosthetic purposes, especially for the correction of facial deformities. Since then an extensive literature on the use of paraffin for such or similar procedures has appeared. About 1883, paraffin was recommended as a root filling material. It is quite difficult to state who first advocated it for this purpose, most likely, however, we are indebted to Charles S. Tomes (5) for its introduction. In 1883, he presented a paper before the Odontological Society of Great Britain (6) entitled: Note upon a method of filling root canals. Tomes' communication is of such vital interest to the full comprehension of the subject under consideration that we have here incorporated the following extract from his original presentation: "There are certain qualities which a perfect root filling material should possess, which cannot be said to be united in any one material in use for the purpose. It has lately occurred to me that amongst the varieties of solid paraffin, such as is used for imbedding tissue for the purpose of cutting microscopical sections, a perfectly indifferent substance of any required melting point could be found, and that if one which melts at but little above the temperature of the body be selected, it would be easy to introduce it in a fluid condition. If a hypodermic syringe be filled with such a paraffin, to which two or three drops of carbolic acid have been added, it will be found easy to introduce the nozzle of the syringe a little way up the root canal, the syringe having been moderately heated; when the piston is pressed the liquid paraffin will of itself run a good way along the previously dried root. An excess having been left in the pulp chamber and cavity of decay, a heated Donaldson's nerve bristle worked up and down the canal will soon carry the paraffin to the very end of almost any root, and it can be kept fluid in the tooth either by touches of a hot instrument, or blowing at it with a hot air syringe. The root may be filled entirely with paraffin, or filaments of wood, or even threads of cotton wool may be passed up into the melted paraffin; probably the introduction of fine fibres of wool will be found to be an advantage in most cases; or fine wire may be substituted for the wool. So far I have had every reason to be satisfied with the results." In the same year (1883), there appeared a communication in the Journal of the British Dental Association on the same subject by G. J. Hutchinson, without, however, offering any new suggestion. From now on sporadic reports may be found in the various journals, for instance, in 1894 to '97, the *Dental Cosmos* published several notices on the use of paraffin by Kirk, Gibbs, de Souza, etc., in its pure state or in combination with aristol, salol, and other substances for root filling purposes. In 1899, Ziegler, in the *Ohio Dental Journal,* refers to it in an article on "Treatment of deciduous teeth." In 1891-93, O. T. Gramm (7), of Chicago, demonstrated and discussed paraffin root fillings before various local and state societies in Illinois, Missouri and Iowa. He advocated base plate paraffin in conjunction with copper points, the technic being about the same as outlined by Tomes. An interesting article on the use of paraffin as a root filling material in teeth with undeveloped roots, by Trauner (8), appeared in 1902. Trauner employed a very small syringe, known as Boehm's syringe, for injecting the liquified paraffin in the root canals of the upper teeth and a heated platinum needle for conveying it into the root canals of the lower teeth. Eckstein (9), in the same year, advocated an antiseptic paraffin compound consisting of paraffin, phenol, oil of bergamot, and potassium iodid. Again, Luniatscheck (10), in 1905, lauds the use of paraffin as a root filling very highly. He advises the use of the Evans root dryer as a filling instrument for such purposes. Within recent years, Dunning (11), of New York, has repeatedly called attention to the excellent qualities of paraffin as a root filling material. Lately, he advocates the use of a mixture consisting of four parts of paraffin, four parts of bismuth subnitrate, and one part of paraform. He places a point, resembling a gutta percha cone, made of this mixture, into the dry root canal and melts it into place by means of a copper wire heated electrically. To remove all of the air, especially in upper teeth, he often passes a solid gutta percha point directly through the paraffin mixture, leaving the point in place. Dunning demonstrated his method at various intervals before the Eastern societies and judging from the published reports, it seems that his procedure met with general favor, but, apparently, has not come into general use. In 1909, Szabo (12) published a most excellent article on some experimental work with various root filling compounds which he carried out in the University of Budapest. From an extended series of experimental tests in which the more important root filling materials were employed he found that paraffin is superior in every respect to any of the other substances used. In the last few years a number of other publications have appeared, notably those of Barthelmae (13), Risenfeld (14), Rumpel (15) and others which are principally concerned with the technic of paraffin root canal filling and less so with experimental work.

CHEMISTRY OF PARAFFIN.

Paraffin, also known as hard paraffin, paraffin wax, solid paraffin, *paraffinum durum,* is, according to the U. S. P., "a mixture of solid hydrocarbons, chiefly of the methane series, usually obtained by chilling and pressing the distallates from a petroleum having high boiling points, and purifying the solid pressed cake so obtained." The name paraffin was given to this substance by its discoverer, Reichenbach, who, in 1830, obtained it among the products of dry distillation of beach wood. At present, it is usually obtained by purifying the waxy substance procured by distillation from petroleum or bituminous shales, or from natural deposits known as ozokerite (earth or mineral wax).

Chemically, the paraffins correspond to the general formula CnH_2n+2; the ultimate analysis yielding about 85 per cent carbon and 15 per cent hydrogen. Purified hard paraffin is a neutral, white inodorous and tasteless substance, having a micro-crystalline waxy appearance with a specific gravity ranging from about 0.840-0.918. It is insoluble in water and indifferent to the strongest acids, alkalies and oxydizing substances, hence its name, *parum affinis* = of little affinity. Chloroform, carbon bisulphid, gasolin, xylol, ether, oil of turpentine, olive oil and, to a very limited extent, warm alcohol will dissolve it. When melted it may be readily mixed in any proportion with fats, waxes, stearin, oils and resins. The melting point of paraffin is variable, it depends largely upon the origin of the material. The so-called soft paraffin, also known as petrolatum, vaselin, cosmolin, and by many other trade names, melts at about 40-42° C. (104-108° F.), while the melting point of the hard paraffins ranges from 45-80° C. (113-176° F.). Ceresin, the hardest of the paraffin series, has the highest melting point, about 80° C. (176° F.). Heated to about 300° C. (456° F.) it is volatilized without leaving a residue. Technically, paraffin is very largely used in the manufacture of candles and lubricating mixtures, as a preservative for meat, eggs, etc., and for water-proofing wood, paper and other materials. It is also used in large quantities as a base for chewing gum, for cheap candies, coating pills, etc.

THE THERAPEUTICS OF THE PARAFFIN ROOT FILLING COMPOUND.

Paraffin as a root canal filling was introduced, as we have stated above, about 1883. In spite of its many advantages over other substances employed for such purposes it has not come into general use. The reasons for this apparent neglect may be largely attributed to faulty technic, to the wrong kind of paraffin, and to the fact that the paraffin filling, in certain causes, will disappear from the root canal after a more or less prolonged period of time. Charles

Tomes, Trauner, Rhein, Gramm and others have called attention to this latter fact and we personally have had occasion to observe it in two instances. However, most observers, agree that root canals from which the paraffin had been absorbed were always found to be free from infection. The disappearing of the root filling is the point most vigorously objected to by those that have used it; if it can be overcome, paraffin seems to be the most suitable material for root filling purposes, or, expressed in the words of a professional friend: Prove to me that this danger does not exist and I shall be a most enthusiastic advocate of it. To explain this phenomenon we believe with Charles Tomes, that the ordinary paraffins, i. e., those having a melting point of less than 45° C. (113°F.), and the so-called base-plate paraffin combinations, which have been principally used for this purpose in former years, become absorbed by the tooth structure. If there should have been present a comparatively large foramen, some of the soft paraffin may have become displaced by ingrowing tissue. These deductions are in conformity with the results obtained by experimental work. If we place a tooth with an open empty root canal in melted soft paraffin, stained with an anilin dye, and keep it for some time at body temperature in an incubator, we find that on splitting the tooth, its tubules are filled with the colored paraffin. On the other hand, the hard paraffin, i. e., that which melts above 55° C. (131° F.), when subjected to the same treatment, is not absorbed into the tooth structure. If the high melting paraffin is previously dissolved in xylol and a tooth root is kept in this solution for a few days at body heat, its tubules also become filled with the solution. The changes which occur in the structure of paraffins of diverse melting points when injected into living soft tissues verify this fact. For these various reasons, it is imperative that the paraffin which is used for root filling purposes must have a melting point of not less than 55° C. (131° F.). Much higher melting paraffins offer no advantages; the high heat which is required for their liquefaction may cause injury to the soft tissues about the foramen and the necessarily high heated instruments are a constant source of danger to the patient and the operator. From our experimental work we have found that what is commercially known as "hard paraffin," melting point 56-58° C. (133-136° F.), gives the most satisfactory results. Since the correct melting point of the paraffin used for this work is of the utmost importance, it is invariably necessary to determine the melting point of every lot of paraffin used for this purpose.*

Since paraffin is colorless, it is of advantage to incorporate some dye material but which must not stain the tooth structure. Incidentally, as Dunning has pointed out, this added substance should give "body" to the paraffin and it should make the paraffin plug fairly impermiable to the X-rays. Bismuth subnitrate, which is largely used for X-ray work in medicine and surgery, has been recommended as an admixture of Dunning to the extent of about 45 per cent. Such large quantities destroy the normal cohesion of the paraffin molecules; it becomes what is technically known as "short." Furthermore, bismuth subnitrate is too bulky and is readily decomposed by high heat and, therefore, it is not suited for combining with a high melting paraffin. We have experimented with a large number of metallic compounds and with pure metals in an extreme fine state of division. Merely to mention a few of the substances experimentally employed, we name the various bismuth salts, mercury sulphid (vermillion), hydrated iron oxid (crocus martis), zinc oxid, zirconium oxid, powdered lead, zinc, bismuth, electrically reduced metals, etc. We have finally found in the anhydrous bismuth oxid, Bi_2O_3, also known as bismuth trioxid, a substance which is well adapted for this purpose. Anhydrous bismuth oxid contains about 90 per cent of metallic bismuth, while the subnitrate contains only about 72 per cent, hence the greater resistance of the former substance to the roentgen rays. If 30 per cent of a dry, finely powdered bismuth oxid is added to the liquified hard paraffin, a smooth compound of a dull lemon yellow color is obtained which produces a distinct shadow picture when it is viewed with the fluoroscope.

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*For the determination of the melting point of paraffin various methods are in vogue. The two following procedures have been selected on account of their simplicity.

1. A small beaker about 3 inches high and 1½ inches in diameter is filled to about 1 inch from its top with distilled water and heated to about 75° C. (167° F.). The heat is shut off and a piece of the paraffin about the size of a small pea is now dropped on the hot water where it will melt in a few moments, forming a thin, transparent layer on top of the water. A thermometer is now carefully lowered into the water until the mercury bulb is completely surrounded by it. At the very moment that a thin, solid film of paraffin is formed the scale is read. This is the point at which the paraffin solidifies, or, respectively, melts. During the observation the thermometer and the beaker must be carefully guarded against draft of any kind.

2. The paraffin is carefully melted in a beaker, and a capillary tube is dipped into the liquid paraffin, and when filled, one end of the tube is sealed in the flame. The tube is now put aside in a cool place for 3 to 5 hours. At the expiration of this time, the tube is tied to the bulb of a delicate thermometer, the length of the tube being the same as the thermometer bulb. The thermometer and the attached paraffin tube are placed in water, and gently warmed until the capillary column of paraffin becomes transparent. At this moment, the thermometric reading is made which indicates the melting point of the paraffin.

The addition of antiseptics to insoluble substances, i. e., high melting paraffin, gutta percha, etc., which are used as root filling materials has practically very little value. Theoretically, at least, it seems improbable since antiseptic action means to become soluble, or to speak more correctly, the drug has to undergo ionization in the medium with which it is surrounded. We should remember that the pharmacologic action of a drug is manifested only when this drug enters the tissues as a liquid or in gas form. When a solid drug is introduced it necessarily follows, as we pointed out, that it must be soluble in the tissue fluids if its typical action is to be manifested. Since hard paraffin, gutta percha, and other similar substances are insoluble in the body juices, they prevent the solution of the drug or drugs which are dissolved in or mixed with them. If the insoluble root filling material contains a soluble antiseptic but offers no resistance to the invading surrounding fluids, i. e., cotton, wooden points, various cements, semi-solid pastes, etc., it will be exhausted in due time. This statement is sufficiently substantiated by clinical observation and experimental work. Inoculated plate cultures in which cones of sterile hard paraffin containing reasonable quantities of thymol, mercuric bichlorid, bismuth oxid, iodoform, etc., are suspended, show a more or less tiny zone of inhibition of bacterial growth within their immediate periphery. It is an indication that some of the antiseptic material deposited upon their surface has entered into a solution. But these small quantities of the antiseptic are too minute to be regarded as being of permanent value. No bacterial growth is observed upon the suspended pure sterile paraffin cones. The ordinary moulds, however, will grow on paraffin. If we wish to cover a root canal with a powerful antiseptic it seems more reasonable to apply this antiseptic separately or dissolved in a volatile medium prior to the insertion of the final root filling. Of the many powerful antiseptics which possess a relative permanent action, comparatively few answer our purpose. A normally liquid antiseptic is not as good suited as one which can be deposited in dry form and which slowly dissolved in the moisture present in the dentinal tubuli. Thymol dissolved in acetone answers the purpose well. It should be borne in mind that no fluid substance will enter the dentinal tubuli of a tooth root *in situ* at once on account of the present moisture; it requires a more or less prolonged period of time (days and weeks) to accomplish this osmotic interchange and it should also be remembered that experiments regarding the penetrability of antiseptics made with tooth roots out of the mouth do not represent normal conditions and are, therefore, misleading. From experimental work we are led to believe that acetone is a fluid which is especially suited as a carrying medium on account of its ready affinity for water, its solvent action upon fatty substances, its penetrating power, its hardening effect on tissues and its ready vaporization. Acetone, also known as pyroacetic spirit, is a colorless mobile and volatile liquid having a characteristic ethereal odor and a pungent sweetish taste. It volatilizes at a low temperature and boils at about 56° C. (133° F.). It is readily soluble in water, alcohol, ether, chloroform and the volatile oils. It is inflammable and burns with a luminous non-sooty flame.

We again emphasize that, according to our conception, the object of a root canal filling is to seal hermetically the foramina and the tubuli with a solid, inert, and unchangeable substance. The mechanical obliteration of the canal we wish to especially emphasize as it offers the only rational solution of the question under consideration. This dictum holds good for all classes of root canals and it does not matter whether the canal is normally sterile, or whether it has been once infected. In the latter case, the sealing of the dentinal tubuli is of paramount importance since reinfection of a root canal is probably always due to those microorganisms which have lodged in the dentinal tubuli and which cannot be destroyed by surface disinfection. The classic experimental work of Mayrhofer, Baumgartner and others, has demonstrated that reinfection of a root canal occurs in this manner, notwithstanding the purely theoretical claims made by certain writers who maintain that complete sterilization of infected tooth structure can be readily accomplished with specific germicidal mixtures. Infectious material may be obtained at any time from a so-called sterilized tooth and when placed in nutrient material will almost always show a luxuriant growth of pathogenic microorganisms. Mayrhofer (16) has pointed out that such drugs as oil of cassia, oil of cloves, the cresol-formalin mixture, iodoform, etc., do not sterilize a root canal permanently. He has further demonstrated that even the much lauded cresol-formalin mixture, when employed as a root canal disinfectant, does not prevent (within eight weeks) the reinfection of 90 per cent of the previously sterile canals. We still adhere to the dogmatic axion that an incipiently infected root canal of a tooth *in situ* may be rendered aseptic by the use of antiseptics, but it is impossible to sterilize the entire tooth structure. To sterilize an infected tooth root, basing our conception upon our present knowledge of antiseptics, means to remove it bodily and to thoroughly boil it.

. Paraffin is a compound which is inert in regard to the action and growth of bacteria; it has no antiseptic action in itself and it can be readily sterilized by heat. As we stated above it is largely used in the industries as a successful preservative for perishable substances, and, experimentally, it has been demonstrated that a paraffin solution (in xyol, for instance) will mechanically inhibit the progress of dental decay. This latter process is too cumbersome, however, to be of practical value. To be on the safe side, as far as asepsis of the prepared cones is concerned, we add to the liquified paraffin compound 2 per cent of thymol; the latter is readily soluble in the paraffin. Any other soluble antiseptic, preferably of the aromatic series, may be used instead.

To more readily comprehend this most important question of reinfection, let us digress for a moment from the subject under consideration and recall to our minds the modus operandi as it occurs in devitalized teeth. The body of the tooth, the dentin, is transversed by the dentinal tubuli which number from 25,000 to 30,000 to the square millimeter. The pulp *in situ* sends protoplasmic process into these tubuli and is connected with the peripheral tissues by arteries, veins and nerves which pass through the main foramen and a number of small foramina (usually from 3 to 7) present in the apex of the tooth. According to a recent investigation by Fischer (17) these accessory foramina are found in about 90 per cent of all permanent teeth. These anatomic facts are not sufficient emphasized at present, their significance is of great importance for the full comprehension of the pathology of secondary infection. In an incipiently infected root canal these dentinal tubuli and the small foramina offer ready hiding places for the various forms of pathogenic bacteria. After exhausting the nutrient material, the bacteria become attenuated or they may assume restive forms. If the tubuli and the foramina are tightly sealed, these enclosed bacteria must necessarily remain permanently confined in their lodging places, while if the root filling leaks, the seepage of serum furnishes fresh nutrient material which offers excellent opportunities for their renewed activities. By continuity this secondary infection spreads along the line of least resistance, i. e., toward the apex and finally reaches the pericementum. This tissue protects itself against the invading foe by a vital response, i. e., a reactive inflammation which results in the production of a fungous growth, known as a granuloma, or in the past, as the abscess sack or the pyogenic membrane. The granuloma is occasionally the starting point of a radicular cyst. For years the enclosed bacteria may remain dormant. At the slightest provocation, however, may it be by over-exertion, a cold, increased blood pressure, lowered vitality, or some other existing cause, they may assume a most virulent activity resulting in the production of the so-called subacute abscess. Based upon this supposition, we are able to furnish a plausible explanation of how these obscure secondary abscesses occur about those devitalized teeth, which, at one time, were pronounced cured. This conception is in accordance with similar pathologic disturbances as observed about old tubercular foci, bone lesions, etc.

THE PREPARATION OF THE PARAFFIN ROOT FILLING COMPOUND.

The formula of the paraffin root compounds reads as follows:

Thymol	2 parts
Bismuth trioxid	30 parts
Hard paraffin melting point 56-58° C. (133-136° F.)	68 parts

Commercial paraffin contains many impurities, principally soluble chlorids and sulphates, water, and mechanical admixtures. To purify the paraffin, it is placed in a vessel containing water and boiled for about half an hour under constant stirring. After cooling, the cake of paraffin is removed, its lower part, which contains the insoluble impurities, is cut away and the process of boiling in fresh water is repeated. After the second cooling, the paraffin cake is thoroughly dried and placed in a porcelain capsule and heated to about 120° C. (248° F.) and kept at this temperature for about half an hour. This heat removes the present small quantities of water and incidentally sterilizes the paraffin. It is now removed from the fire, filtered through cotton cloth and slightly cooled off. Under constant stirring, the thymol is now added, and, after it has dissolved, the previously dried powdered bismuth trioxid. After the mixture becomes solid, it is slowly remelted on a water bath, well stirred, and cast into suitable molds.

EXPERIMENTAL WORK.

When pure sterile paraffin is injected into the human body with ordinary precautions, it is tolerated by the tissues without further reaction, provided that the injected quantity is within reasonable limits (about 2 to 3 grams to the dose). This statement is sufficiently substantiated by the rather extensive use of paraffin for prosthetic purposes in surgical practice. The same is true of the paraffin compound as suggested by us for the filling of root canals. To verify this assertion, injections were made into the loose alveolar tissue under the skin of rabbits. The primary object of these experiments was to determine whether the tissues would tolerate the paraffin compounds equally as well as the pure paraffin. At various intervals, doses of about one gram (15 grains) of soft and hard paraffin and of the paraffin root filling compounds were injected. The rabbits were anaesthetized and these substances were introduced in a semi-liquid state of means of a heated syringe. Very soon after the injection, the substances solidified and could be clearly outlined by the touch of the finger. By testing the rabbits at various periods the paraffin deposits could always be clearly felt by the palpating finger, no change seemed to have taken place. After the expiration of respectively 2½, 4, 5 and 6 months, the paraffin tumors were removed under an anaesthetic. The hard paraffin deposits were sharply outlined but they were imbedded in a dense capsule of tissue. By careful dissection, the deposits with their adhering connective capsules were removed. The largest of the paraffin compound deposits measured 18x13x5 millimeters and weighed 0.8 grams (12½ grains). Sections were made to detect any changes in the structure of the compounds.*

It was observed that the body of the hard paraffin compounds were intact, the capsules adhering closely to the outer surfaces and filling every crevice of the paraffin plugs. The various colored compounds were not altered in the least which indicated that the tissue fluids had not exercised any solvent action. The paraffin compounds contained various per cents (from 10 to 30) of hydrated iron oxid or bismuth trioxid. These observations are in conformity with the results obtained by Gersuny, Moskowicz, Stein (18) and others, who have experimented with hard paraffin. It may be interesting to know how this process of incapsulation takes place. According to the researches of Marchand, a sterile, foreign body, when introduced into the living animal tissue and left there for a certain length of time produces a series of changes which are generically known as reactive inflammation. The wandering of the leucocytes, the exudation of serum and the proliferation of the cells of the ground substance which finally organize into permanent tissue are the typical successive expressions of the irritation brought about by the foreign body, ultimately resulting in its encapsulation. If we compare these findings as observed on comparatively large quantities of paraffin with the rather small amounts which accidentally may pass beyond the foramen of a root canal in an attempt to fill it, we are reasonably certain that they will be retained permanently by the tissues without the slightest disturbance. When the semi-liquified paraffin compound is forced beyond the foramen, it molds itself about the end of the tooth and, on congealing, forms a solid cap over its apex. For this reason hard paraffin is the most satisfactory canal filling-material in all cases where an open foramen, an incomplete calcified root or a perforation of the root is present.

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*For thin sections, the tumor is best imbedded in celloidin; for thick sections, low fusing paraffin is to be preferred.

When soft paraffin is injected into the tissue, the changes which occur differ markedly from the above observations. The soft paraffins, i. e., those which melt below 42° C. (106° F.), are also incapsulated but the connective tissue fibres grow through the entire mass in all directions, and, in due time, as it has been stated by Erkstein, Delangre, Ligoric and others, this semi-organized paraffin becomes absorbed (and decomposed?) through the action of the leucocytes (ferments?). The present extensive use of Beck's bismuth paste (19) in surgery and dentistry, which contains approximately 70 per cent of soft paraffin, furnishes excellent proofs of this process of absorption. Not alone does the paraffin become absorbed but the tissue fluids dissolve the otherwise insoluble bismuth subnitrate and, as a consequence, severe bismuth poisoning has been observed in some cases (20). Hence, *we* emphasize again that a paraffin which is used as a root filling material must have a melting point above 55° C. (131° F.).

To test the impermeability of paraffin to water, innumerable tests were made. Thick-walled glass tubing, drawn out to capillary points, and extracted teeth were used in connection with various colored fluids, principally methylen blue solutions. When glass tubing is used for experimental work, its expansion and contraction under heat must be taken into consideration. It is quite unnecessary to describe the various tests in detail, but merely to mention a few, the following are cited. Glass tubes, of about ¼-inch in diameter and 6 inches long were drawn out to fine points so as to resemble a much enlarged root canal. These tubes, from the point up, were partially filled with melted paraffin or the paraffin root filling compounds and the balance with the anilin solution. The tubes with their points down were then suspended in test tubes filled with plain-water. In another series of tests, the upper part of the charged glass tubes was filled with plain water and then immersed into colored fluids. In all instances, provided the necessary technical details were observed, a water-tight plug was produced by the paraffins; no leakage could be noticed. At the junction of the paraffin and the colored fluid a slight discoloration in the center of the paraffin could be observed, which indicated the contraction of the paraffin in hardening. It is important to observe, that this contraction occurs only in the center of the paraffin cone at its thickest part. Again, teeth whose root canals were filled with the paraffin compound were cemented into glass tubes, the unprotected roots reaching into the tubes. These tubes were about 30 inches long and were filled with the anilin solution. After weeks of observation no leakage could be observed. Again, teeth whose roots were filled in the above manner were kept in an anilin solution and after intervals of days and weeks were ground down to the root filling; no leakage could be observed. The results of these various tests merely indicate that the paraffin or paraffin compound when melted into a root canal *lege artis* forms an absolute water-tight plug.

To ascertain the adaptability of paraffin compounds to the walls of root canals, the canals were prepared in the routine manner and filled with the paraffin compounds. The teeth were now placed in 50 per cent solution of hydrochloric acid and set aside in a warm place. The acid has to be renewed every day. Usually within three to five days the entire tooth substance is completely destroyed. The remaining root fillings are washed in water and kept in a dish filled with the same fluid. The root fillings float on the water and may be readily studied with a magnifying lens. Great care is required in handling these delicate paraffin castings, they will easily break. The root fillings present a perfect plastic picture of all the irregularities of the root canals. The paraffin compounds had flowed into all ramifications and irregularities of the canals, even the fine burr markings near the entrance of the canals could be observed. In studying these casts, it was noticed that the irregularity of the anatomic structure of the root canals occurred with an astonishing regularity. In one case we were fortunate enough to obtain the roots of a left lower first molar of a boy, 14 years old, which had been filled with the paraffin compound by a student in our infirmary. The tooth remained intact in the mouth for 9 months and 9 days. Its cement filling was lost and the boy returned. It was deemed best to have the broken down tooth removed. The roots were carefully ground down and they showed perfect root fillings without the slightest sign of absorption. In a few cases we had the opportunity to fill the root canals of teeth doomed to extraction with the paraffin compound before their removal. They were subjected to the above treatment and the results obtained were always satisfactory, i. e., they were completely filled to the point wherever the hot wire had reached.

Regarding the relationship of pathogenic bacteria to hard paraffin we have stated above that the latter has no influence on the growth of these organisms and that it does not furnish a suitable nutrient medium for their further development. Paraffin is a hydrocarbon (not a fat) and, consequently, it is not subject to putrefaction. To test the hard paraffin in regard to the permeability by bacteria we employed the same procedures as outlined by Webster, Cook and Szabo. The apparatus employed corresponds to the one used in the tests for the permeability of paraffin fluids. The sterile glass tubes were partially filled with the paraffin compound, virulent cultures of pus organisms were added and the tubes closed with cotton. The charged tubes were dipped in sterile bouillon and placed in an incubator. Within a week's time no growth was noticed. From a large number of observations we are forced to conclude that the paraffin root filling compound is impermeable to bacterial growth.

In using the paraffin compound, or, in fact, any other material, for the filling of root canals, the question is often asked: What becomes of the air if forced beyond the foramen when filling a canal? This little air when forced beyond the foramen will be taken care of by the soft tissues, and, since it is not forced into a vessel, no danger from air embolism is to be expected. That such small quantities of air, even if injected into a vessel, are absolutely free from danger, has been recently experimentally demonstrated by Blair and McGuigan (21).

TECHNIQUE OF FILLING ROOT CANALS WITH THE PARAFFIN COMPOUND.

The sine qua non of a successful paraffin root canal filling is an absolutely dry root canal. To accomplish this end, certain physical procedures are in vogue, i. e., the hot air blast, the electrically heated root dryer, the heated wire, of which the Evans root dryer probably is the best known prototype, bibulous paper cones, cotton, etc. To facilitate the removal of moisture hygroscopic chemicals, i. e., alcohol, chloroform, ether and other substances, are often used in conjunction with the above enumerated means. These compounds, with the exception of alcohol, have little affinity for water and hence are of no practical value. As we have stated above, acetone is well suited for this purpose. In drying out a root canal, it should be borne in mind that the removal of its natural moisture or any other fluid placed into it is well-nigh impossible with the much lauded hot air blast if its foramen is closed. A few trials on an extracted tooth or a glass tube drawn out to a fine solid point and filled with water or any other of the above enumerated fluids will readily convince one of this illusory conception. The fluid will move back and forth upon the elastic cushion of air confined in the end of the tooth or the tube, or, if no air is present the heated air blast will practically make no impression on the moisture column. The removal of the moisture is usually best accomplished by using bibulous paper cones in conjunction with the heated metallic root canal dryer. The secession of the hissing sound following the introduction of the hot wire indicates that the desired effect has been successfully achieved. In passing, it is well to remember that over-drying of the tooth structure is a dangerous procedure. If more or less of the water which holds the gelatinous matrix of the tooth in colloidal solution is removed by over-heating, that tooth is proportionately weakened against physical or chemical insults. Black, Cook and others have repeatedly called attention to this fact and it is well borne out by clinical observation.

After the root canal is freed from its moisture, it is flooded with acetone and dried again with the hot wire point. The object of this procedure is to remove every particle of moisture from obscure nooks. When a root canal which is kept continuously moist with a most annoying, persistent seepage is thoroughly dried out with acetone and the heated root dryer, the seepage will usually stop immediately. A wisp of cotton wrapped about a broach and dipped in pure paraffin oil (also known by many trade names, such as liquid alboline, cosmoline, oliphane, etc.) is now passed into the dry root canal and immediately followed by the hot compressed air blast so as to uniformly coat the canal. Its object is to cover every accessible surface with a thin film of oil, which, in turn, facilitates the ready flow of the liquified paraffin compound into every available space. Too much oil must be carefully avoided. This lubricating of the canal constitutes an important factor in the correct technique of the paraffin root filling method. A cone of the prepared paraffin is now inserted into the canal and the heated root dryer passed along its side. By a gentle pumping motion the air is expelled and the semi-liquified paraffin is allowed to flow into the canal. The film of the previously introduced paraffin oil and the semi-liquified paraffin compound possess great affinity for each other and wherever the oil film has been deposited the paraffin compound will readily flow. Care should be exercised not to overheat the paraffin compound. It is essential, however, to keep the root dryer fairly warm so as not to chill the semi-liquified paraffin when the dryer reaches the deeper portions of the canal. As the paraffin compound melts at less than 60° C. (140° F.), there is no danger of burning the patient wtih it. Sufficient paraffin compound is now added so as to completely fill the canal. It has been suggested to finally insert a gutta percha cone or a heated copper wire into the filled canal and leave it permanently in place. Such procedures insure a more perfect filling; they overcome the shrinkage of the paraffin in solidifying. Gutta percha cones as suggested by Dunning are especially well suited for this purpose; they act as a core and insure a more perfect adaptation of the softened paraffin to the irregularities of the root canal. In using these cones their extreme points are first cut off and they are then quickly pressed in the semi-liquid paraffin. Fine copper wires for such purposes are readily obtained by cutting suitable pieces from an electric light cord. On congealing of the paraffin compound a slight depression in the center of the filling near the entrance of the root canal will be noticed. This contraction is in conformity with the natural tendency of the hardening of the paraffin; it will always congeal from the periphery toward the center and thereby insures an unchangeable, permanent and absolute water-tight sealing of the canal walls. The paraffin compound finally is covered with a layer of oxychlorid or oxyphosphate cement to form a solid foundation for the future permanent filling. If it should become necessary at some future time to remove the root canal filling, the introduction of the heated wire will readily liquify it; it can then be removed with bibulous paper cones, the broach, and, if necessary, with a solvent, i. e., xylol.

The position of the patient in filling root canals of teeth in the lower jaw is self-explanatory; in filling the canals of the upper teeth, the chair is tilted backward so as to obtain a horizontal position of the upper teeth. As capillary attraction plays an important role in this procedure, the paraffin compound will readily follow the heated wire.

Regarding the instruments used as root pluggers for this work, any wire which will retain heat sufficiently long enough to melt the paraffin and which can be filed to a point fine enough to reach the smallest canals is suitable for this purpose. Silver or copper, or an alloy thereof, are good heat conductors and therefore the most suitable metals. A one-inch coil made of No. 10 or 12 copper wire, with a three-inch extension, filed to a fine point, answers the purpose fairly well, the Evans root canal dryer with its silver point is also very useful, though the best results are obtained with the electrically heated point. The heat, which can be perfectly gauged in the latter appliance, at once characterizes its superiority over the other instruments. The fine point of the root canal plugger must be able to carry a minimum temperature of 60° C. (140° F.).

In recapitulating the technique of root canal filling with the paraffin compound, the following points are the most important factors which must be rigidly observed:

Carefully drying out of the root canals.

Lubricating the canal walls with a thin film of paraffin oil.

Filling the canals with the prepared paraffin compound by means of a heated wire, using a pumping motion.

Covering of the finished root filling with a layer of cement.

During the last two years, the improved paraffin compound has been used extensively as a root filling material in our infirmary and by a number of practitioners. So far the results obtained have been exceedingly gratifying and we now take this opportunity of offering the material and the technique of its application to the profession at large for further trials.

RESUME.

Hard paraffin, having a melting point of 56-58° C. (133-136° F.), with the addition of 30 per cent of bismuth trioxid and 2 per cent of thymol possesses the following qualities as a root canal filling material:

First. It is non-putrefactive.

Second. It is sterile and slightly antiseptic.

Third. It is easily introduced.

Fourth. It is absolutely non-irritating to the soft tissues; when forced beyond the foramen of a temporary or permanent tooth or through a perforated root, it is borne by the soft tissues without the slightest reaction.

Fifth. It does not discolor the tooth structure; it possesses a distinct yellow tint which makes it readily discernible to the eye.

Sixth. It is non-porous and unchangeable; it produces an absolute permanent water-tight filling.

Seventh. It is easily removed.

Eighth. It will seal hermetically the dentinal tubuli and the foramina against bacterial invasion.

Ninth. It is opaque to the Roentgen rays.

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PROCEEDINGS OF SOCIETIES.

THE WISCONSIN STATE DENTAL SOCIETY, FORTY-SECOND ANNUAL MEETING, HELD AT OSHKOSH, JULY 9, 10, 11, 1912.

DISCUSSION OF THE PRESIDENT'S ADDRESS.

Dr. W. E. Tennant:

While the president speaks with pride of his election to the highest office within the power of this Society, I feel that I voice the sentiment of the members of that honorable body when I say that it was with pleasure and pride that we elected him to that office and we should feel indeed grateful that Dr. Banzhaf could be induced to direct it this past year.

The address is replete with timely and valuable data and suggestions, and has covered the ground in a comprehensive and masterly manner. I am not able to go into a thorough discussion of this document—I only wish I was.

It is indeed an advantage, that we younger men hardly realize, that we should have such men as the president has named, to "blaze the trail" in dental education, men who have stood for high standards always, who have sifted the grain from the chaff, and left us a society whose record is unsullied. We are proud, and should be, to belong to such an organization.

To cure disease is a noble calling—I think the most noble of all callings—but to prevent disease is perhaps equally as important, and, as the president has stated it, it is gratifying that we are living at a time in our profession when the great majority of us are ever striving to prevent and find solution for the many problems and diseased conditions that we so frequently meet with in our daily practice.

The last phrase of the "Object" of this Society (quoted by the President) which states "and by co-operation with the medical profession in all matters of mutual interest and advantage to the people of the state"—defines our position in broad and generous terms. We are servants of the people and are ready to work for the betterment of the people.

Could we have 90 per cent of the ethical dentists of the state working along this plan—what a power for good we would be—and how much more benefit humanity would derive from our efforts.

This Society has made a creditable showing in its increase of membership during the past year; but it seems that a more effective plan could be worked out whereby we could greatly augment our membership during the coming year.

Illinois is still far ahead of us in this line. Well directed effort by each one of us, a plan of looking up and urging all ethical dentists of the state to join with us, explaining the many benefits derived from such an organization, would perhaps help us to give a substantial increase to our membership.

Our state law we are and should be proud of—it is undoubtedly one of the best dental laws upon the statute books of any state today.

The raising of the entrance requirements of the colleges, that they require a four-year high school course, places the colleges in a position of which they may well feel proud.

About the process patent bill, the President's suggestion is timely. Anything arising in our profession that threatens to tear asunder the fellowship, the harmony and the dignity of the profession is worthy of deep study, but it seems to be the opinion of our thinkers that process patents upon anything designed to cure or correct disease is wrong in spirit and principle.

The charge made by Dr. Hunter against dentistry is a grave one, and while it is false, and there are other subjects of which the writer knows, I hope, a heap more about, we can undoubtedly accomplish better results, have less infections from our work, and give our patients more comfort than we have in the past if we will be a little more careful in our methods.

We have men who will do what we term "bad dentistry," which includes ill-fitting bands, loss of proximal contact, impingement of bands on peridental membrane, careless surgical operations, laceration of the gingival margin, crowning hopelessly diseased roots, etc.; but the proportion of these men is far less than the proportion of charlatans that infest the medical fraternity.

The average dentist does not pay enough attention to sterilization. An instrument to be sterile must be boiled for twenty minutes in a covered vessel (that the temperature will be about 220° F.); even then spores are liable to be left unkilled.

When you think of the many cases of syphilis in every city, tuberculosis, diphtheria (the germs of which will live in the throat for three months), pus germs, some of the most pathogenic that are met with, contaminating our instruments, and those instruments merely wiped off—well, gentlemen, we are not doing our best to prevent infections, to say nothing about spreading disease.

We cannot be too careful in our diagnosis—many cases of chronic alveolar abscess have been treated surgically when they should have been treated medicinally, and vice versa; and many other phases of our work might be cited, where suffering has been caused or prolonged through carelessness or an error in diagnosis.

The X-ray will help us in making a diagnosis many times, and should be used more often.

Anesthetics have not been used often enough. If we will remove the pulps from teeth (when necessary) painlessly, and it can be done if we will use care and take the time—dentistry would lose most of the horror attached to it and we would gain millions of new patients as well.

The proper care of the teeth of the school children is, I think, a state problem; certain it is that about seven out of every ten pupils between the ages of 4 and 12 are in need of immediate attention. When these conditions are materially improved we can look for better citizens; as it has been proven by actual tests that proper dental care not only improves the child physically but mentally and morally as well.

Dr. Osler says: "There is not one single thing more important to the public in the whole range of hygiene than the hygiene of the human mouth."

The fact that many of our best surgeons refuse to operate upon the digestive tract until the mouth is placed in a hygienic condition places a responsibility upon us, and gives our field of endeavor an importance heretofore unknown.

The Russell Sage Commission report, referred to by the President, places a value upon our services that can not be overestimated.

Mr. Horace Fletcher worked, wrote articles and lectured for six years to get people interested in this subject, but no one became interested. Finally his son-in-law, reading a paper before the British Medical Society, was heard by Sir Michael Foster, who became interested at once. Since then many thousands have become students of the effects of mastication upon the physiological activity of the digestive tract.

The film idea, mentioned by the President, for the education of the laity, surely seems to be worth trying and undoubtedly would bring goodly returns upon the investment. I want to say again that the President's address is worthy of our most sincere thought and deliberation, and I trust this Society will act favorably upon the suggestions and advice he has given us.

DR. R. J. WENKER:

Mr. President, Ladies and Gentlemen: I am particularly pleased to be called upon to say something upon this subject, because my friend, Dr. Banzhaf, made the address. The doctor speaks of the honor conferred upon him by the Society, and I believe I am voicing the sentiment of the members of the Society in saying that we are pleased to confer upon him that honor, and we are congratulating ourselves on the wisdom of our selection. He has presented a great many subjects, some of them of such vast importance that it would be impossible to discuss the subject in its entirety. From a general standpoint I most heartily agree with everything that he says, and agreeing with a man, we cannot say a great deal except perhaps to emphasize some points. The doctor shows an unusually large grasp of problems which confront us, and has presented so many subjects that it is hardly probable that we can consider them all in open meeting in this manner, and before I close I want to suggest the appointment of a committee to consider the matters presented, and to take some concerted action. I have listened to president's addresses from year to year, and although many of them have presented good ideas, as a rule no definite action is taken, and it seems too bad that that should occur. Something should be done, and therefore I would favor the idea of a committee to take up the matter and advise upon some definite plan of carrying out the suggestions.

Dr. W. E. Mason:

I would like to express my ideas on component organization work. I do not feel that throughout the entire state the Wisconsin State Society has made quite the headway that we could have done if it had not been for the existence of some independent organizations that have not consented to come in with us yet. I feel that if the territory that is covered by these independent organizations could be worked by component societies such as we have throughout the rest of the state, there would be no question of continuing the gain that we have already made. I think that at the time of the organization of the Society we had about 200 members. That was four years ago. Today we have about 500, which is not yet a very heavy percentage of the number of men in the state when we have somewhere from 1,400 to 1,500 men. About two months ago I had the pleasure of attending the fiftieth anniversary of the Iowa State Society, and I was pleased to find that they were working upon very much the same lines that we have been working on. They have had, I think, considerable more success than we have had, and I attribute that success entirely to the non-existence of local organizations to hinder them. They have a few small organizations, but they readily came in with the state society. I think they have two components covering the entire state. They likewise had at the time of the reorganization about 250 members, and about 1,050 men in the state. Today they have about 1,100 men in the state, and a membership in their state society of about 750, showing conclusively that they have done far better work than we have, and I attribute it, as I say, entirely to the non-existence of local societies. Then if we compare this state with other states we see where we are a little ahead of them. Take, for instance, the state of Minnesota. The Minnesota State Society has not made the headway in organization that we have, and I attribute that entirely to the existence of their larger independent organizations, though I understand now they are taking steps to follow up with the rest of them, and I think that if we can formulate some plans at this meeting to help overcome these obstacles we will put ourselves far in advance of what we are now, and within a comparatively short time will be in a very good position to take up the matter of national affiliation. I do not think that any of us ought to be satisfied or be content to let things go as they are now, nor to quit working until we have attained that point where we can represent a very large percentage of our dentists in the state, and work along that line and secure national affiliation.

Dr. Wenker:

Mr. President, I would like to add just another word about the hygienic movement. It seems to me that the hygienic movement is one of the largest and most important movements that can be taken up in the profession. I am still in doubt whether we all fully realize its value to future dentistry. We cannot make any progress in this direction until the whole of the dental profession is thoroughly informed on the subject, and not only informed but enthusiastic, thoroughly imbued with the idea, so that each individual may spread it; and further than that, that the medical profession likewise would have to become surcharged with the idea, so as to cooperate with us in this direction. Speaking of hygiene as a measure which any societies may take up in the future, reminds me of the interest that men engaged in the treatment of tuberculosis show in mouth hygiene. I have seen quite a number of instances where specialists in this direction have demanded that the mouth be placed in a hygienic condition in order that they might make progress in treating the tubercular condition. In regard to the educational movement, I want to say that I do not believe in individual movement. I do not think that our president intended to convey that idea either. I do believe in educational movement providing it is a concerted movement; a movement conducted by societies and controlled, if possible, by the highest society in our community, or even in the national. If the reorganization of the National Dental Association takes place, which we hope it will, on the plan of the National Medical Association, I would favor the idea of the educational movement being in their hands, with their sub-committees in the state societies, or sub-committees in the local county societies, and in that way getting much better results because of concerted effort. We cannot accomplish very much when we work individually. A little spurt here and another there really in the end does not accomplish much; so that I believe there is strength in the concerted effort of the various organizations controlled by the highest organization in the field.

Dr. T. W. Brophy, Chicago:

Mr. President, surely you have taken me unawares. In the first place, I wish to say that I am very glad that I am here. There was a period something like fifteen to twenty years ago when I was quite a regular attendant on the meetings of the Wisconsin society. It just occurred to me as I was sitting here, that thirty-two years ago this month I read a paper in Milwaukee on the subject of "Facial Neuralgia," which was published in the *Missouri Dental Journal* in 1880.

I desire to say that it has been well worth my trip here to listen to the address of the president. It is unnecessary for me to say to this audience that have known him quite a number of years now, and I have appreciated him because of his earnestness and faithful devotion to the work that he has been doing; and the opinions that I have had of him in the past have been confirmed today in listening to his excellent address. An address like that is not created in a few hours of time. It does not happen by chance. It is the outgrowth of work, of long, careful consideration, of deep thinking, and then the analyzing of his thoughts, putting them on paper, crystallized in the form that we have received them this morning. Such an address as this will certainly be productive of great good. It is the kind of an address that one may well sit down and read and study again and again. Very many phases of the address, the thoughts that he has presented to us here this morning, may well take up the attention of a committee, as suggested by Dr. Wenker, with a view to reading again and bringing out and urging upon the members of the profession their importance. To urge their importance and to impress upon the minds of the profession such thoughts would not alone bring about the results that the president is so desirous of accomplishing; but to present to the profession such thoughts and have them work upon those thoughts and accomplish what the president has outlined, and to improve the conditions in the community is what the address, we all hope, will accomplish. It is always delightful to attend a meeting like this; to meet one's friends. I have met gentlemen here today whom I have not seen in many years, perhaps eighteen or twenty. It is delightful to come to such a meeting, and I wish that the members of the profession generally might feel it and act upon the thought and attend a greater number of meetings. It takes time, but just think what we have heard this morning; how much better we are for having heard it; how much more good we can accomplish in our work. It is well worth the time that is spent in getting such information. I see that Dr. Wenker, speaking of the phase of hygiene referred to in the president's address, is enthusiastic on the subject, and well he may be. Whenever an opportunity like this offers I like to say something about the real origin of this tremendous work. If I were to omit naming the man who has done more than any other man at present living, or in the past, to establish this work in the different nations, I feel that I would not be doing justice to myself, since I have this knowledge, nor to the distinguished man who was first engaged in it and successfully carried it out. I refer to Professor Ernst Jessen, of Strassburg, Germany, the president of the Commission of Hygiene of the International Dental Federation. It may not be known to all present here this morning that Dr. Jessen was the first to establish a municipal dental infirmary and carry it out successfully in the city of Strassburg, where a place about half the size of this room is prepared for the reception of the school children of that city, and where five municipally compensated dentists devote all their time to the care of these children. Those of you who have read his writings know how much has been accomplished. Professor Jessen's work in that department was not looked upon very favorably ten years ago by the Federation, but it grew without effort, apparently, and this was accomplished: by resolution of that body, the governments of the world had their attention officially drawn by this international body to the importance of all hygiene in the armies and the navies of the world; suggesting the importance of having dental surgeons in the armies and navies, so that the soldiers might receive the attention that they require. What has been accomplished? Now we see almost every nation with dentists in the armies and navies. We see this tremendous wave of hygiene that started in Germany has swept around the globe, and we are feeling it in America the last five years more than ever before. The national associations have taken it up. I must speak of Ebersole in Cleveland, who has been working so hard that he is broken down in health and is scarcely able to attend to his duties, devoting his time so assiduously to carrying on this work of hygiene and assisting in extending it throughout the states. It has spread over the continent over into England, which was very slow in taking it up, and into America, and around the world, China, Japan, and so on, and into the far East, and today the medical profession more than ever before in its history, recognizes the importance of oral hygiene; of the arresting of sepsis within the oral cavity, and employing measures to prevent disease, more than ever before in its history. And how much better that is than the administration of drugs, with a view of correcting a septic condition when it is allowed to go on and permeate the whole body. Today medicine recognizes it and the most eminent medical men of our country and others come out and declare that the proper course to pursue is to prevent disease at the very vestibule of the body—the mouth. In an article recently printed in the *Dental Cosmos* for June a physician of Chicago points out 125 diseases originating in the mouth, as the result of unhygienic conditions, and this is the great topic today. There is nothing before the world more important than preventive medicine. The most important function of the physician is to teach his patients how to avoid disease, and he will accomplish the most if he succeeds in impressing upon them the importance of oral hygiene.

DR. J. P. BUCKLEY, Chicago:

Mr. Chairman, Ladies and Gentlemen: I can assure you that I appreciate the courtesy that was extended to the visitors, and I would be very glad indeed, if time permitted, to discuss some of the many valuable points made by the president. I am not going to take up your time any more than to say that I came here uninvited, unless I could assume, as I did, that I had a standing invitation to the Wisconsin State Dental Association. I wanted to see how it would appear, or how it would be to attend a meeting where I had absolutely nothing to do. That is the reason I am here today. I thank you, Mr. Chairman. I know how busy your program will be for this afternoon, all of which I want to hear, and I will not take any of your time to discuss the points that I would like to discuss in the president's address.

DR. R. OTTOLENGUI, New York:

Mr. President and Gentlemen: After listening to this address I find that there are a number of matters touched on and discussed which I had already planned to discuss in the address which I am to make this afternoon, so that it seems unnecessary at this late hour to go into any real discussion. I would like to say, however, that I have been in attendance at a great many dental societies, both local and state, and I have heard a great many presidents' addresses; a great many more than I have wanted to hear, and I have never heard a better president's address than I have heard here today. Your president has shown that he has a masterly grasp on the complete situation in dentistry in connection with all of its problems, and I think that his address has been superb. I have heard it bandied back and forth here as to whether Wisconsin has honored Dr. Banzhaf by making him president, or whether it has honored itself by having him as president. I think the honors have been easy.

DR. HART J. GOSLEE, Chicago:

Mr. Chairman, Ladies and Gentlemen: I really was trying to hide for fear you might call upon me. Not but what I should be most happy to enter into a discussion of this excellent address, but because of the fact that I feared the time was drawing too close. I want to say, ladies and gentlemen, that we, from the sister state of Illinois have known your president for a great many years, during which time we have learned to expect a great deal of him, and in this instance I agree with all that Dr. Wenker and Dr. Ottolengui and the others have said in that we have no occasion to be disappointed. There are many features of the address that I would like to take up for discussion, but time preventing, I can only say this, that the recommendations suggested by your president should be acted upon favorably at the earliest possible moment, in my opinion. I am very happy to be with you again today. This is the second or third time, I believe, that I have had the pleasure of visiting with the Wisconsin State Society, and I can assure you that it is always a pleasure to me to be with you. I thank you very much for calling upon me at this time.

DR. W. B. HILL:

Mr. President, I surely did not expect to be called upon, as I am a sort of an outsider; but I wish to say that I would have been delighted if some of the medical profession could have been here this morning and heard that address. I think that we would have realized better than we do now, that there is much to be learned from your profession. I think that we would realize more than any of us do now that there ought to be a closer contact between these professions. We are engaged, as you are, in this field of uplift, and in hygiene—terms almost synonymous—intermingled, at least—and if we are going to work together in this field we ought to get closer together professionally. There is a field in which we need your help, and possibly you need ours, and that field is in the mouth. We know far too little of what you know, and we ought to work better, more in the line of cooperation, and now we have a splendid opportunity in this field of dental hygiene and uplift. It is a fact that we have raised a splendid people here without paying very much attention to hygiene, but that is because of environment. But today, as we are congregating all of our people in the cities, and bringing together the mass action of all those things that are evil, it behooves us if we are going to perpetuate this as a nation of progress, that we look to the health of our people and prevent disease, and to save to the people the health which is far more important than the natural resources of our country. I have come here to learn, and I have learned a whole lot already. I learned a lot coming up on the train from these distinguished gentlemen, our guests, here, and I learned a lot from the president's address, and I expect to learn a whole lot more before I go back, and I hope that some of you may have the pleasure of attending some of our meetings. I would recommend that you send an invitation also to some of us to come to your meetings and learn more of your work. We would appreciate you better, and I hope that humanity will be better served by both of us.

DR. BANZHAF (closing the discussion):

Mr. Chairman, I am deeply touched because of the kind remarks that have been made of the president's address. I am deeply touched because of the presence of dear personal friends of mine, whom I have known many years, and if I may permit myself a personal remark I would say that I am most deeply touched by the presence of my dear old friend, Dr. Brophy, whom I have always regarded as a professional father, and whose advice and counsel I have always found it well worth listening to and attempting to follow. I thank you all for the patient way in which you have listened to the president's effort. I want to announce that the time is very short, and we are particularly favored this afternoon by the presence of Dr. Hart J. Goslee, who will read a new paper; a paper which has never seen the light of day, on the subject of "Removable Bridgework." The paper had been turned over to Dr. Ottolengui, the editor of *Items of Interest,* for the August number, I believe, if I am correctly informed, and has been profusely illustrated and has been most generously released by Dr. Ottolengui to permit Dr. Goslee to read it here at 2 o'clock. The profession of Wisconsin is to be congratulated, and I will ask you to be here at 2 o'clock sharp, and to bring your friends to hear this paper, which, as Dr. Goslee says, is a short paper, but which I know is full of meat. Following that, we will listen to Dr. Ottolengui upon the subject of "Reorganization of the National Dental Association," and such other subjects as he may wish to present. Following that we will, if possible, include the paper of Dr. Blaine and Dr. Eisen this afternoon; if not, a plan will be worked out, but I think we will get that in very comfortably, and the entire evening will be devoted to a consideration of the magnificent paper that Dr. Prinz will present, profusely illustrated with the stereopticon, upon the subject of "Local Anesthesia." I know that the paper this evening will be worth any man's while to travel a thousand miles to hear. I know that the same is true of Dr. Goslee's paper and the other gentlemen who will speak.

DISCUSSION OF THE PAPER BY DR. GOSLEE ON "REMOVABLE BRIDGEWORK."

DR. R. OTTOLENGUI:

I have been trying to classify myself; trying to find out just exactly where I am located in this profession which we call dentistry. If I go to a banquet I generally am called on to answer to some such toast as "Dental Journalism." Last week in Chicago I was attending the American Society of Orthodontia and talking of nothing but the articulation of teeth, occlusion, etc., and I spent a few days in Chicago visiting around, and I discovered I was known mostly in Chicago as a dental politician. Now I am asked to discuss removable bridgework.

It does not follow that because I do not do crown and bridgework that I cannot discuss it, because I find myself very much in the situation of a book critic who had harshly criticised a book which had been written by a friend of his, and his friend came to him and said, "I don't think much of your criticism of my book; but what could I expect, you are not fitted to criticise a book because you never wrote a book." "No," he said, "you are wrong, my friend. That does not follow, because I have never laid an egg, but I am a better judge of omelettes than any hen in the United States." Now, from what attitude shall I discuss this question of crown and bridgework? I do not consider myself a crown bridgeworker; just an ordinary dentist; and I do very little crown bridgework. If I have a patient for whom I feel that the very best work must be done, then I do it myself. Otherwise I send it to a specialist. When I do send a piece of work to a specialist—and, by the way, I do not ask the specialist for a commission—I like to feel that I have certain rights in the case. That is to say, having advised that patient to go to this man, I ought to know about the problems involved to be able to determine afterward whether that specialist has done the best that could be done with the problem in that mouth.

Now, it seems to me that there are two very important principles which should underlie crown and bridgework: First, a thorough restoration of normal occlusion so that the patient can be restored to the complete use of his masticatory apparatus. Indeed, that is what the patient comes for; secondly, and it is only second because one has to be first and one second, the conservation of the teeth already in the patient's mouth. In other words, we should restore the lost organs with as little danger as possible to those that remain. Now, when we remember that the Creator himself, if he thought at all—which was probably not necessary in the greatest of all creators—but if he had thought at all we see that he had solved this problem with the conclusion that no two of the organs should be united; that the stress should never be imposed upon more than one tooth at a time, or rather that the stress on one side should never be transmitted to its neighbor. Also we find these teeth, human, normal, natural organs, safeguarded from stress by being not fixed in their sockets, but being supplied with a cushion which enables them to have a certain amount of lateral, a certain amount of rotary, and a certain amount of vertical movement under stress, so that the great shock should be resisted by this cushion. Now, of course, we cannot imitate that exactly, but we should do it as nearly as possible. We should save these teeth that are in the mouth as much as possible from this shock of stress which they must sustain. I want to call your attention to the fact that the essayist in this particular paper is discussing what he calls assembled abutments. Have you thought of this, that in all fixed bridgework you have assembled abutments. Your fixed bridgework always unites your two abutments or your three abutments. The advantage, however, of the removable fixture such as shown here today, which, nevertheless, is anchored to assembled abutments, over the assembling of abutments with a fixed piece, is just this: that there is that lack of elasticity in a fixed bridgework which we obtain in this removable structure. It seems to me that one of the big advantages of this particular type of appliance is that it is not too rigid. It should have a certain amount of movement; just as much stability as is absolutely necessary in the process of mastication and for the comfort of the patient, so that he need not have his teeth in his mind when he is delivering an after-dinner speech for fear that they may drop out, and at the same time enough movement, so that under the stress of mastication he does not, when he is biting on his false organs transmit too much stress to his natural organs which are serving as an abutment. I think the pretty thing about this particular method of uniting two abutments which are a distance from one another, is this: stress is always exerted in two directions; seldom, I think, in three. In the stress of mastication one portion of the stress of course is against the food, and the other is against the tooth which chews the food. If the direction of that be distal, and if that third molar, we will say, if it is being used as one of the abutments, is standing alone, it must endure all of the transmitted stress of that piece as it moves against it. We see when that is being done, when under the normal stress there is no exertion being placed against the anterior abutment, nevertheless the anterior abutment is protecting that posterior abutment through the bar which unites the two. That I think shows that Dr. Goslee has very capably solved that portion of the problem. The rest of the problem must be solved by the man that makes the piece, irrespective of the method. The rest of the problem depends entirely upon the accuracy of your occlusion. Let me say here that there is just only one normal occlusion for each case. If your artificial teeth are above the occlusal plane at any point you invite additional and dangerous stress at that point. If it is below the occlusal plane at any point then you invite dangerous stress at the high points of your structure. It should be made as God meant it to be made, so that in all the excursions of the mandibles there would be an equal distribution of the stress, and if you do that you run the least risk of having your teeth lost in a short time; you serve your patient in the longest possible time you can by making a removable fixture which conserves your abutments, and in which the occlusion is so perfect that the stress is distributed throughout the entire piece. I am sorry that being only an orthodontist and politician and journalist, I cannot do any better.

Dr. Christensen:

I would like to ask a question: in case of recession of the gum below the bridge, the stress would all come on the bar, in case he had two abutments. How would that be provided for?

The President:

In answering that question I would like to add another which I will ask the essayist to further elucidate, and that is, how does he produce or supply the tube? The technique of supplying it, or is it supplied by someone?

Dr. Goslee:

I answered that. I said you could make it very easily out of a 26 gauge clasp metal, or you could buy one already mode, for 50 cents; a Roach tube.

Dr. Rasmussen:

I would like to ask the essayist in case of the lower or the molars and bicuspids are all gone, what do you find the best method of keeping the artificial substitute from slipping backwards? Do you extend clasps around the cuspids, partially around them, or would you entirely depend upon the end of the bar?

Dr. Goslee:

Absolutely, yes, sir.

Mr. President, I haven't anything to say in conclusion, except to answer Dr. Christensen's question. In the construction of all forms of removable structures, the most difficult thing we have to contend with is to provide against a subsequent recession. There is no doubt of that. But in proportion as you have supporting teeth sustaining to a degree the stress of mastication, in the same proportion will you minimize the subsequent settlement of the case. As an example, if you have no attachment to the remaining natural teeth at all, whether it be a simple vulcanite denture or metal pressure case, or anything, without any support at all that will keep on settling, because absorption of soft and hard tissues, principally hard, is constantly being stimulated by the very mobility of the piece. But if you diminish the degree of mobility by obtaining attachment to support the natural teeth you have minimized the amount of absorption; and I believe I may be permitted perhaps to take just a second longer of the time to give you a typical case of mine which I explained to Dr. Ottolengui a day or so ago, and which I did accomplish in my office. A gentleman came to me with the first bicuspid in the right side of the lower jaw remaining in his lower jaw, no other teeth being present on that side, three having been lost recently, and he wanted me to build some kind of a structure for him that would sustain all those remaining teeth as well and as long as possible. I crowned the bicuspid. I used an inlay in the cuspid with a closed tube running down into the root of the tooth. I attached those two pieces together, thus anchoring the cuspid and bicuspid together; assembling them. I then had a split post go down into that tube in the cuspid and a clasp fitting into a socket made purposely for its reception in the gold crown. In the building of the rest of the fixture I utilized the split post going down into the tube and the clasp as a means of securing the greatest degree of strength in the attachment of all that fixture to those two teeth. If I had taken the final impression for the removal of all the rest of the teeth in the attachment of that fixture to the parts which go down in and fit to the natural teeth—if I had pushed that attachment consisting of the split post and inlay and clasp clear down to place when I took the final impression, and built that case to the normal occlusion, it is only a short time of course before that occlusion would have been lost, because there must be some settlement there that would have to take place rapidly because of the recent loss of the three or four teeth. But after I made those attachments as accurately adapted to each other as possible, before I took that final impression I raised them up out of place about three millimeters and then took the impression, in order to accommodate at least that much of subsequent recession; and that was necessary in that case because a few teeth had been out only such a short while. I want to go back to the first point only by way of emphasis to say that in proportion as we anchor those cases at one or both ends against stress, will we diminish the amount of settlement, because we reduce the amount of stimulation to settlement which comes from mobility.

ILLINOIS STATE DENTAL SOCIETY, MAY, 1912.

DISCUSSION ON THE PAPER OF DR. HARPER.

Dr. Edmund Noyes:

I greatly regret that Dr. Pruyn, who was assigned to open the discussion on this paper, is not able to be present at this meeting. He has been in California for his health, and has only recently returned.

The first thing to be said in the discussion of a paper like this is that it is impossible to give too much honor or too much encouragement to labors of this sort and the report of them brought to the society. However uncertain, however discouraging the results of experimental work may be, we cannot by any possibility offer too much honor or too much encouragement to the men who undertake it. Dr. Black told me once that he worked upon the amalgam question for one or two years steadily and constantly before he got the clew to the investigations which resulted in the great increase of knowledge in respect to amalgams which he contributed to the profession. So if we can by encouragement or honor or suggestion persuade these men to continue their work, it will be the most important thing we can do in this discussion. The results of it remind me very forcibly of a little reading lesson in one of the books I saw when I was a child entitled "The world of chance," in which the supposition was made that everything came by chance; that the sun might rise in the east this morning, and perhaps in the north tomorrow morning, and in the west the next morning, and that it might be summer today and winter tomorrow; that things happened by chance without any order or reason or any way by which we could foretell what was to be expected or what was to happen. It would seem as if amalgam were almost this sort of a material, judging by the results of these experiments.

There is one thing stated in the early part of the paper which I would like to change just a little bit. I believe the essayist said that "Our amalgam technic and alloys were greatly improved as a result of the invention of the micrometer." I do not think that represents the case. The invention of the micrometer was an important adjunct and incident of the investigation work which resulted in the improvement of alloys, but the improvement was due to the discovery by Dr. Black of the exact proportions of silver and tin, and the method of handling, which would produce an alloy free from expansion or shrinkage. The micrometer was only an adjunct to that work, and not the origin or the source of it. It seems to me that this work has brought up a very important matter in relation to the value of filling aside from the question of the stability of the material as respects expansion or contraction. I think we must all acknowledge, when we think about it, that the perfection of adaptation to the walls and margins of cavities is of primary importance, and now in view of these experiments the *stability* of adaptation seems to me an important matter as relates to amalgam. I do not know of but two ways, outside of clinical observation, by which we may test the adaptation of a filling material to the walls. Those are the two chief points alluded to in the paper, the air pressure test, and examination of the surface of the filling under the microscope after it is removed. This last would amount to nothing in the case of a filling that was removed from a tooth, because the walls of dentine against which it was packed are not smooth enough to have the microscopic examination a certain indication of adaptation, or the lack of it, but amalgam packed against the smooth steel wall and examined afterwards under the microscope will offer an adequate test of adaptation by the appearance of the surface. It would seem from this test and the leakage test also, that amalgam is not so plastic a material as we have been in the habit of thinking. It certainly is plastic, and if it is plastic, that implies, does it not, that there would be a certain amount of movement under heavy pressure. If it would not, I should not think it would be plastic. If you have got to place each particle in a particular spot and have it remain there as cohesive gold, although cohesive gold is at least malleable, if not plastic, there would seem to be a far closer similarity in the necessary details of adaptation in the manipulation of gold and manipulation of amalgam than most of us have supposed or believed. Unquestionably amalgam can be handled faster, but it would seem as though we must particularly carry each portion to the place where we want it and leave it there and not disturb it by subsequent crowding. It is not an easy thing to do. I do not think there is any question but that imperfect adaptation is the most frequent cause of failures in the operations that we make of either gold or amalgam. It is possible, as suggested by the essayist, that amalgam can be packed into a cavity more closely and get a more trustworthy adaptation to the wall of dentine than it can to the wall of steel, and I wish it were possible to make these tests upon fillings which are made in dentine or ivory, but I think that is impossible or nearly so because dentine and ivory are such unstable materials in themselves. The change in bulk in a piece of ivory the size of a tooth, or of the dentine of a tooth, coincident with the changes of moisture from day to day in any office, are far greater than the change in bulk in expanding or contracting of any amalgam ever used, and unless the utmost care were taken would vitiate any of the tests for leakage that could be made in such a material. The question will naturally arise in the mind of every man who listens to such a paper as this, as to what possible explanation there can be for the clinical success of amalgam fillings. I am not prepared to give the explanation. I am satisfied that in the old days, when we all used largely shrinking amalgams, that the shrinkage of the material was sufficient to spoil about three-fourths of all amalgam fillings that were made within a few years. Observation of such fillings for forty years justifies me in saying this, notwithstanding the fact that at every dental society you will hear people mention fillings that have done service for ten, twenty, thirty, or even forty years. I am positively convinced that three-quarters of them do not do service ten, twenty, thirty or forty years, and their failures were mostly due to the leakage of the fillings. Whether the clinical success of the nonshrinking and nonexpanding amalgams which we have had in use for now fifteen years can be explained by the greater possibility of adaptation against the dentine wall, and that the surface of dentine may hold the amalgam and not have it slide quite so easily in packing, I do not know. Probably still more important is the strong pressure in packing, such as the essayist uses, which may exert some force of compression against the very elastic walls of dentine, so that the tension of the elastic wall makes the filling tighter than the inelastic steel wall. There is no question whatever but that this is a very important matter in regard to gold fillings, particularly well made gold fillings, where the filling puts the dentin surface under elastic tension sufficient so that it will follow any shrinkage of gold filling that is possible by the action of cold upon it, and will explain the fact of the gold fillings remaining tight under anv changes of temperature than can be made. Whether amalgam will come under that head, I cannot positively say. It is possible there may be some oxidation, or a tarnishing process, the tarnishing meaning that there is a coat formed over the surface of similar character to a coating of rust and which occupies a little more space than the pure metal in consequence of the addition of the element which corrodes it. Whether that may help to tighten some of the fillings, I do not know; but, at any rate, clinically they do much better than these tests would lead us to expect.

The fact that I cannot make suggestions that may be valuable in the further prosecution of this work is no sign that you cannot. I hope you will.

Dr. C. C. Corbett, Edwardsville:

Not having made any tests of amalgam fillings, or done any scientific work along the line as indicated by this paper, it seems impossible for me to discuss it intelligently, and more particularly as the essayist has requested that the discussion be directed along the same line as the paper, that he may be better able to continue these investigations, and it is to be hoped that some suggestions may be made in this discussion that will help Dr. Harper in this experimental work, whereby better results may be obtained. It seems to me from these experiments so carefully conducted, that they show that amalgams are most erratic and unreliable, so much so that if I had never had any experience with it as a filling material, I would not give it shelf room. We have described in this paper fifteen of what are said to be our best alloys, all scientifically mixed, skillfully, and thoroughly packed in M. O. and M. O. D. cavities by a careful and painstaking operator, showing a surprising range, and variation in the inefficiency of these amalgams. The range of leakage reaching as high as 30 lbs. with some and as low as 6 ounces with others, and the range is so extreme with the same alloy, and in fact so extreme with all the alloys (except one, and that one test was very poor) makes one come to the conclusion that there is no reliability to be placed in them. It seems to me, beyond a doubt, that these-records prove that amalgam is extremely erratic. This paper is certainly a revelation to me. It is not difficult to insert gold fillings that will not leak at 60 lbs., while very many of these different kinds of amalgam fillings leak in the ounces. From these tests it seems very difficult to get adaptation to cavity walls, and when inserted, this adaptation, as indicated by these tests, varies from day to day. If this is correct, then there must be some infinitesimal space between the filling and cavity walls at one time, which does not exist at other times. If this is a fact, from a theoretical standpoint, it would place amalgam in a class by itself, as an unreliable filling material. It is to be hoped that the result of these experiments will lead to the manufacture of still better alloys whereby perfect adaptation may be had.

However, theory and practice do not always agree, it is my belief that clinical experience has placed amalgam, when properly used, equal with other filling materials, as a preservative for the posterior teeth, and when I say properly used, I mean when the adaptation is made perfect, and all infinitesimal spaces are filled by the use of soft cement lining, the same as the adaptation of the cast inlay is made perfect with soft cement lining. The cemented filling will be the filling of the future regardless of any opposition it may have at the present time. And after these experiments and careful tests of Dr. Harper, I should say that cement is especially indicated under amalgam until such time as an alloy is obtained capable of perfect adaptation to cavity walls.

Dr. Frank J. Ryan, Chicago:

I only heard a part of the paper, but what I did hear was exceedingly good. I regret to say I have not the education nor the instruments to go into the technical work that Dr. Harper has given us; but my clinical experience leads me to think that most of our amalgam failures are caused by ourselves. In other words, we fail to properly pack the amalgam in the cavity after we have properly prepared the cavity. All of us know that a great many amalgam fillings are placed in cavities without a careful attempt to prepare these cavities. I believe it is impossible for even a very careful man to fill a "hole" in a tooth if he has not properly prepared the cavity. I have sixty or seventy fillings I have picked out of a scrap pile since I have commenced to investigate this work. Some of the fillings were taken from cavities that had been prepared by the most careful operators, who packed the amalgam in to the best of their ability, and it is surprising to see the defects shown in these fillings made by men who did their best—men who do fine work in other things, and who have our respect from one end of the class to the other. In all my practice I have followed the instructions I received in college until I began to do some experimental work, and I am inclined to think most of that instruction was wrong. (Laughter.)

There was one thing about it that was good, and that is the fact that no amalgam filling can be properly packed into a cavity unless it has four good walls. That was hammered into me by Dr. Dittmar, and I do not believe I can put in an amalgam filling unless I have these four walls. I have come to the conclusion that every sort of amalgam filling should be packed in soft cement. It makes a better looking filling after you have taken the filling out. (Laughter.) I notice you laugh. I do not mean that I have taken out fillings that have been packed in with soft cement. The best experience I have had has been confined to a single tooth. Recently a patient came to me with an upper bicuspid tooth that had a mesio-disto occlusal amalgam restoration, and which was brought up over the remaining cusps. The patient told me it was there for several years without any decay or leakage. I cut the tooth down carefully, and cut away all the tooth substance I could so that I would have the filling to look at. It is the best amalgam filling I have ever removed, regardless of who put it in. It was somebody in St. Louis who did it. I have no history of the case beyond the fact that she had worn it for seven or eight years.

I have forty fillings in tubes I am going to show tomorrow that have been packed by the various operators in the City of Chicago and neighboring towns. There may be four of the forty that looked like good fillings, with the naked eye, but when you use a small magnifying glass you will find there are defects in all of them. I went to extremes in packing some of them. I have small oblong cavities in a tooth brush handle; I packed them to the best of my ability, put on two or three sheets of rubber dam, and screwed it up tight in the vise. This is not a perfect filling. Under the magnifying glass it looks like cast iron, after the sand has been brushed off. It is similar to that when you look at it. I have some fillings packed into a smooth surface. For instance, a glass tube packed in with a small surface plugger, and with my best efforts I was not able to pack one of the glass tubes full enough but what a man with reasonably good eyes could see defects in the packing. I packed between the beaks of perfectly smooth nickel-plated pliers. One pair of pliers was serrated so that things did not slip and by stopping at either end with all the pressure I could bring to bear with the pliers. That makes a smooth surface filling that Dr. Harper speaks about. It looks very good with the naked eye, but with a big magnifying glass you find a granular appearance all the way around. When I line the glass tube with soft cement, take a hammer and knock the filling out, it breaks the tube. It makes the best looking filling I have. Some of them look very good under a small magnifying glass. My experience leads me to think that I shall never put in any more amalgam fillings without packing soft cement under them. I am sorry I was not able to get soft cement lined fillings like Dr. Harper so as to test out the crushing strength of them. It is my belief that very few amalgam fillings break. Most of them will stand up as well as gold fillings, and I am inclined to attach more importance to the packing of amalgam fillings than to shrinkage and expansion of the alloys we now have and the failure of dentists to pack them to the walls is something we should look to with more care in the future than we have done in the past.

Dr. Noyes spoke of the clinical features of amalgam fillings. Personally I have a little bit of history concerning them. I have some amalgam fillings that were placed in my mouth in 1883-84. They were put in by an ordinary country dentist with no college training. The teeth do not appear to have decayed, Dr. Dittmar has not offered to take them out and put in gold. (Laughter.) I have some amalgam fillings that were inserted 20 years ago and they are in the same condition today so far as I can judge. Seven or eight years after that I had an amalgam filling put in when I was in a dental college. It has given trouble, and will come out soon. The last one I had put in is the one that failed. Clinical observation really amounts to nothing because gold fillings put in the mouth are no nearer perfection than amalgam fillings are.

I recall a lady patient who had a so-called Richmond crown on a lateral incisor that had a cavity under the base of the crown of about two by three millimeters, I should estimate it. This patient rebelled against having the tooth removed, claiming it was perfectly satisfactory and that she had worn it for sixteen years. This shows the unreliability of clinical observation. A good many things last a long time clinically that are failures from a technical standpoint.

Dr. G. W. Dittmar, Chicago:

While I was listening to Dr. Harper's paper, which was excellent, well delivered, and showed a great deal of work, the thought that occurred to my mind was: it hooks up with what Dr. Ryan has said in reference to amalgam fillings lasting so long clinically, and I remarked to Dr. Roach in a jocular way that I now understood why it was that amalgam fillings stood so well. There is one thing absolutely necessary for bacterial growth, and that is quietude. Bacteria cannot grow on things that are constantly being disturbed (laughter). We see from the report that Dr. Harper has given us and from reports given us before, that this stuff is constantly on the move. It goes forward and back, opens up a gap and in comes a brigade of bacteria; then it closes up. Both Dr. Harper and Dr. Ryan told us that some of these fillings are not well adapted and that there are cavities in them. The reason why all the microbes present are not killed when the crevices close up, is because some of them get into the depressions and they can go on secreting acid and some of these fillings fail because of recurrant caries. But seriously we must be impressed with the unreliability, the fickleness, of this material. Let us try to get down to the bottom of the thing and see what is the cause of this. I am going to try to tell you what is the cause. That is what Dr. Harper said he wanted to know. The reason that these amalgams act so peculiarly in the majority of instances, is because the alloy itself is not right. Dr. McCauley is surely on the right track when he tells us that the alloy must be made absolutely correctly. We must have absolutely pure metals that must be combined in the right way and in the right proportions. When an amalgam maker gets to the stage where he can mix and alloy pure metals in the right proportions, he will give us something that is absolute. That is the first requisite.

Dr. McCauley emphasized in his article before the National Dental Association that amalgam makers should have micrometers and test every batch of amalgam, yes, every ingot, from which amalgam is to be made.

The next thing that is necessary is pure mercury. We can buy mercury at the drug store that likely has numerous base metals in it, and that will spoil the amalgam.—First, a perfect alloy; second, pure mercury. These are two most important things if you would have a perfect amalgam, and then third, comes the very important thing,—manipulation. If you mix the alloy and mercury right, provided you have the right things to mix, you will get perfect results at that time. But what is in the way of getting constant results? A very peculiar thing; it is the way in which this material acts. Take a fresh, perfect alloy, properly annealed, mix this just right with pure mercury, you may mix it today, make a test filling and you get results that are right. You take the same material; identically the same, and in one month from today you mix it and it will act differently in its working properties, expansion or contraction. That is a feature we cannot now overcome. The man who can overcome that feature will do us a great service. We hear men say, "You must weigh the mercury and weigh the alloy." That applies all right for today, but in a month from today and in six months from today, that would not apply at all. Amalgams age themselves. We age them artificially. We anneal them by boiling them in water for about fifteen minutes. The longer you boil them the slower setting amalgam you make. The longer you boil them, the less mercury they need. Take one that has been boiled for fifteen minutes, mix it and it makes a perfect filling, but let it stand on the shelf, and at the end of three years the proportions of mercury and alloy needed will be very different. You will have different stuff. It will work differently, and it will act differently, and not make a perfect filling. That is the unfortunate part of the amalgam proposition. That is the thing I cannot explain. I can understand how an alloy can be made which if it is used reasonably quickly after it is cut and annealed will give practically constant results. Old alloys are not good. Every package of alloy should bear the date it was cut and annealed.

As to the cement lining in connection with the amalgam most dentists use. What is it going to do with the cement lining? If you get something that does not move, it is all right, but it is a crystalline mass and if it contracts it is going to break the cement. You can put a gold filling in a cavity lined with cement and have something that does not expand, or contract, except through thermal changes, and I believe the same thing holds with regard to an inlay, but with most amalgam fillings it is not the same. I confess, I am personally lining cavities with cement, and it is an advantage in some cases to do so. But we are surely impressed by the paper that our present amalgam is fickle stuff and we should only use it where we have to. I use it, and I believe there is a place for it, but I am of the opinion the less we use of it where good gold fillings or inlays can be made, the better it is for our patients.

Dr. Robert J. Cruise, Chicago:

I have only a word or two to say. One point has not been mentioned by those who have spoken on the subject of amalgam, and it is a very important point, namely, it is a mistaken notion that all the mercury should be expressed after the amalgam has been mixed. Practical experimentation along that line by men who have done it in a scientific manner has shown that an amalgam mix from which the mercury has been thoroughly expressed gives the least possible strength. The amalgam should be mixed, and then a portion of the mercury expressed until its consistency is that of a rather soft mix. When such an amalgam hardens, it shows the greatest strength under pressure. Dr. Kester, who has done experimental work along this line in conjunction with Dr. Black, shows that amalgam mixed in that way will stand a pressure up to 350 pounds. An amalgam mix from which the mercury has been thoroughly expressed, putting it in a piece of chamois and with pliers removing all mercury possible, has been found at times to stand a strain of only fifty pounds. I feel as though I could not let the subject go by for fear this point might not be mentioned by some one.

Dr. J. M. Barcus, Carlinville:

Such a paper involves a lot of hard work, and I think the society is indebted to Dr. Harper for it.

I would like to ask Dr. Harper, in closing, to state if in making these tests he saw evidences of leakage of water. I think there is a big difference between forcing air around those fillings or forcing water, or saliva.

Dr. J. G. Reid, Chicago:

I would like to ask Dr. Harper if he has done any experimental work in the direction of packing fillings under the rotary method. Some four or five years ago Dr. Callahan, of Cincinnati, read an excellent paper before the Chicago Dental Society, that was quite instructive, and he has experimented a great deal along lines of this kind, and as I remember, he reported that a most reliable way of packing amalgam into cavities was by a rotatory motion, and that the success of amalgam fillings in his experience and practice was due entirely to being able to get rid of the air spaces. But he admitted himself that it was impossible to accomplish this perfectly even with rotatory motion.

Dr. Arthur D. Black, Chicago:

I did not intend to discuss the paper, but in view of the fact that Dr. Cruise has connected the name of Dr. Kester with Dr. G.

V. Black in the statement which he has made, it seems to me it is only just that Dr. G. V. Black's views on this point should be mentioned, in view of the fact that they are opposed to those mentioned by Dr. Cruise. The impression may have been gained by the coupling of the two names and the experimental work done by them that he was expressing the views of both men. I do not care to go into the details of the discussion except to say this: that neither the remarks of Dr. Cruise nor those of Dr. Ryan would give us any definite idea of how much excess of mercury they consider ought to be left in a mass of amalgam. Some must be left there. I would get the idea from what both gentlemen have said that a mass would be left which would tend somewhat towards sloppiness. I will only give you the tests which Dr. G. V. Black has given of what the consistency of this mass should be. Let us suppose we are ready to use the mass. If we roll it in the palm of the hand with the finger, we will be able to press it out into a considerable roll without breaking it apart. Second, as we roll it in the hand with slight pressure, we can hear a cracking sound similar to the sound we hear if we rub the finger over the hairs near the ear. Third, the mass will take and retain the skin lines of the finger, on pressure. Fourth, if we roll the mass up into a ball and place it on a table or a flat hard surface it should be stiff enough so that the ball will maintain its form. These four tests express his idea of the consistency we should have our amalgam if mixed properly.

I call attention to the fact that fillings in those cavities in the steel matrix, which were the shallowest in proportion to their circumference, showed the greatest leakage; as the depth of the cavities became greater in proportion to the diameter, there was more opportunity for the material to have a grasp on the side walls and the leakage was less. Dr. Harper suggested that amalgam will stand better in contact with tooth wall than when a steel matrix is used. I am inclined to believe that if he will make a similar series of experiments, using cavities in teeth, thereby omitting the micrometer, taking amalgams that are standard, keeping these teeth moist and making pressure tests occasionally, he will secure better results than those reported.

Dr. Harper (closing the discussion):

I take this opportunity to emphasize one point which my experimental work unmistakably indicates to me; and that is: that the packing of the entire filling must be done by packing the entire surface as each piece of amalgam is added, with a small flat serrated faced plugger fifteen-tenths of a millimeter in diameter (or less). Large pluggers may be used to facilitate the work, but the essential packing must be done with small pluggers to secure the most perfect filling and adaptation.

I agree with Dr. Black that the best results are attained by using the proper proportions of alloy and mercury and the mixing and kneading to a uniform consistency; which may be recognized as that degree of plasticity which gives the most perfect impression of the skin markings. The packing of high grade alloys should commence while the mass is in this plastic condition.

There is no question in the minds of most of the profession as to the value of amalgam as a tooth saver, notwithstanding the results of these experiments, and it would seem fair to presume that amalgam exerts some antiseptic or tooth preserving quality not found in gold, as a leaking gold filling almost without exception results in early decay whereas it is a daily occurrence to see faulty amalgam fillings that have saved and continue to save teeth.

All of the reports presented are of the best known high grade alloys. The slow setting alloys, such as amalgamate readily and make a very plastic mass, due to the large per cent of tin they contain, are not reported; as, without exception, they leaked under the air pressure test almost immediately, and I considered them unworthy of further attention at this time and can only add my condemnation of their use to that of previous investigators.

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EDITORIAL.

THE PANAMA-PACIFIC DENTAL CONGRESS.

In March, 1912, a meeting was convened in San Francisco at which a committee was formed to organize a dental congress to be held in San Francisco during 1915 at the time of the Panama-Pacific Exposition. This committee consisted of fifteen members—one from each of the Pacific Coast states, Oregon, Washington, Idaho, Utah, Arizona, and Colorado, one from Southern California, and eight from San Francisco and vicinity. These men constitute the Committee of Organization of the Panama-Pacific Dental Congress.

In order to properly attend to the business affairs of the Congress and its promotion so far as finances are concerned, a corporation has been formed within the Committee of Organization.

This consists of five members and is known as the Pacific Dental Congress Commission of 1915. One share of stock was issued to each member of the corporation, no other stock being issued, and they assume all financial responsibility for the Congress. The corporation receives memberships and subscriptions, for the latter issuing debenture bonds which entitle the holder to his pro rata of all funds remaining in the treasury of the corporation at the close of the Congress.

It is expected that the Congress will be self-supporting from membership fees and the fees of exhibitors, and the money subscribed now will be used for promotion purposes.

The membership fee has been fixed at ten dollars, and any membership fees received now will be placed at interest, only the subscriptions to the bonds being used for promotion.

Over $8,000.00 has been subscribed to date and the present outlook is that it will be over $20,000.00 before the Congress meets. The American Society of Orthodontists and the National Dental Association have voted to meet in San Francisco in 1915, holding business sessions but adding their programs to the program of the Congress.

The chairman of the committee and president of the corporation is Dr. Frank L. Platt, and the secretary of both is Dr. A. M. Flood. This of itself is a sufficient guarantee that the movement will be carried to success. It is planned to have a ten or twelve days' meeting, with no evening sessions, the evenings being devoted to entertainment.

The editor of this journal was in San Francisco in September and he was greatly impressed with the scope of the work already outlined and the business-like way in which the promoters of the Congress were proceeding with their organization. To have already subscribed more than $8,000.00 means that there is some substantial enthusiasm behind the movement, and now it remains for the organized profession of all the states of the Union and for the profession of other countries to aid in this important undertaking and work with undivided energy for its success. The Pacific Coast men are doing their part in a most worthy manner, but to have this Congress truly representative they must have the coöperation and hearty support of the profession elsewhere. Let us all pull together as a man to make this meeting one of the greatest ever held.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS.

ANOTHER VACATION STORY.

(Continued from the November issue.)

HONOLULU.

The day before we reached Honolulu the weather became so warm that the passengers and crew came out resplendent in clean white attire, and it was the whitest white I ever saw. The effect was beautiful, and it lent a luxurious and leisurely air to everything that was most delightful.

And now what shall I say of Honolulu? I have never approached a subject with greater enthusiasm, and yet at the same time with so heavy a sense of inefficiency. I saw it from so many angles, with such a varied series of lights upon it and consequently so many points of view from which to approach it that I suffer from a sense of confusion. It is truly an embarrassment of literary riches, and yet the first thing I am compelled to say about it is most humiliating to myself. It is in the nature of a confession to the effect that my first glimpse of Honolulu was disappointing. But I hasten to remark, lest there may seem the slightest shadow on the glory of the picture I wish to paint, that this was not the fault of Honolulu. It is merely because one sees it from such a distance, and the town is so nearly obliterated from view by the profusion of tropical growth—the details of which cannot be made out from the ship—that one gets the impression of a very straggling place with merely the speck of a house here and there set down in the bushes. And then the presence of great oil tanks on the harbor banks seemed somehow out of keeping with my preconceived notions of the poetic traditions of the place, forgetting as I did for the moment that Honolulu has a commercial significance today which, while it does not to my mind in any sense outrank or detract from its historic and legendary interests, yet forms a very important complement to them.

But if my first impressions of Honolulu were a trifle disappointing, my actual experiences while there left me devoid of adjectives with which to adequately express the emotions—and I use that word with due deliberation—which took possession of me before my visit was over. I never expect to experience another such a day in all my life—another twelve hours into which were crowded so many climaxes, so many surprises. My first joy came at the dock as the ship slowly crept alongside. We had been on board seven days, had not seen a face that we had ever seen before, and were at that moment surrounded by all the unfamiliar features of a typical tropical port—natives in strange crafts bobbing about the harbor—dark brown boys in swimming, and queer sounds and sights on all sides. Suddenly I let out a yell. It wasn't exactly a Hawaiian or Fiji Island yell—just a plain ordinary Chicago shout, and bless your heart it was answered back in kind from the dock. There stood my old friend Dr. A. B. Clark, formerly of Chicago, but now practicing in this "Paradise of the Pacific." I would rather have seen Dr. Clark that minute than all the reigning sovereigns of the world in a bunch. He had come down to meet us, and soon had us in an automobile whizzing up town. Instantly I corrected my point of view of Honolulu—the die was cast—I was a slave forever more. Honolulu shall ever and aye be music in my ears, and I shall dream of her long after I am dead, if I dream at all.

I fear to write of this place, as I feel lest those who have never seen it may say that I have exaggerated, while those who know it well will be sure to say that I have detracted and utterly failed in my portrayal. The best things in the world cannot be described.

Native Canoe.

You cannot paint the picture of a beautiful spirit in words, and if I were to epitomize my impression of Honolulu in a single phrase, it would be to say that she is celestial. I hope to make my meaning clear later.

Naturally the first place to which we drove was the home of my good friend—everybody's friend—Dr. J. M. Whitney, formerly of Ohio, but for more than forty years a practitioner of dentistry on the Island. (Which reminds me just at this point that I have always been mistaken about the location of Honolulu. I had supposed that it was situated on the Island of Hawaii, but it is not.

It is on Oahu—a smaller island than Hawaii, and some distance from it.) To be actually in the home of Dr. Whitney was to me a rare treat. He took me over his place, showing me the various species of tropical fruit trees, not one of which I had ever seen before, both of us talking at the rate of sixty miles an hour down grade with the brakes off. I don't know whether or not it was the tropical atmosphere in which I found myself, but I chattered like a monkey at meal time. And a peculiar coincidence—adjoining Dr. Whitney's was the home of a former patient of mine, one of the dearest girls in the world, who had married and come to Honolulu to live. The doors are all open in Honolulu, and as I stepped up on the porch and rang the bell I saw her coming away down the immense room which opened to the porch. I forgot to be formal, rushed in to meet her, and chattered some more. I had known her ever since she was a slip of a girl, and here she was a young matron, with a beautiful baby boy. Next came her mother and her brother Harry, here on a visit. It seemed almost as if I were transported back to Chicago, and Chicago was changed to a tropical paradise. I got a snap shot of that baby boy, his mother, and his grandmother, and you couldn't buy it. They urged us to stay to breakfast, but Dr. Clark had other plans for is, so we drove to the Courtland, a beautiful home-like hotel, so clean, so quiet, so luxurious. And that breakfast! The first meal on shore for more than a week, delicious in every way, with a dapper little Jap boy waiting on us most deftly. The walls of the dining room were nearly all windows and all open. The air—can I ever describe it—even the ruggedest old Norseman must have been lulled to oblivion by it. But I must hurry on.

There was one feature of Honolulu which impressed us all most profoundly, and that was the natural ornamentation of the trees and shrubs. We had never seen anything approaching it, either in profusion or depth of color, and I was naturally anxious to get some detailed information regarding it. But strange to say I could find nothing bearing on it. I have most diligently searched the Governor's Reports and the Annals of the Honolulu Chamber of Commerce, together with other available literature, but all to no effect. Those people out there seem to take it for granted that their city is to be decorated beyond description by the prolific hand of nature, and that it is not necessary for them to make any particular fuss about it. That may be the proper point of view, but if I had half as fine a display as that I would tell the world about it. Never have I seen such coloring and so much of it. Probably the

Avenue of Royal Palms.

most striking is the beautiful ponceana tree, with its bright red canopy of flowers hung high in the air and so thick as to almost look like a solid mass of color. When we think of flowers at home we think of bushes or vines, but here were big trees bursting with a glory that almost made one shout for joy. And we saw not only the reds but all conceivable colors—the yellows, the purples, the pinks, the golds—some of them great brilliant splashes of contrast against the background of livid green.

But to me the most impressive of all were the palms. There were all varieties from the small hot-house species we see at home to the great towering Royal Palm standing like majestic sentinels along the drives or avenues or private lanes. These trees are typical of the most luxuriant tropical growth with their long, round, bare trunks devoid of the semblance of a limb to near the top but marked with rings at regular intervals for more than two-thirds the way up, from where they are perfectly smooth as if whipped clean by the gentle swaying of the feathered leaves. To see these palms in pictures is to get small measure of the sensation which creeps over one in gazing at the actual thing itself with the soft breezes—there is always a breeze on the island—fanning one's

Banyan Tree.

cheek, and the lofty branches waving high overhead. I have only one regret—that my friends could not all be there to see.

And then the Banyan tree, the most striking contrast to the Royal Palm, low set and spreading, with its trunk deeply corrugated and seamed longitudinally as if the limbs all ran down its sides to the earth, and occupying enough space on the ground to accommodate a dozen palms, its limbs starting out low down on the trunk and spreading every way in such a tangled mass of confusion as to be bewildering to the gaze. I should not like to tackle the problem of cutting down a Banyan tree. There were all shapes and sizes and kinds of trees with a great variety of foliage from the broad heavy fat leaf of the immense cactus to the thinnest, spindliest, filmiest and hair-like needles of the delicate Chinese tree—all beautiful and all interesting. I never expect to see anything like it in one place again.

Surfing at Diamond Head.

After breakfast we all started out in the automobile with Drs. Whitney and Clark as the most capable and sympathetic "Explainers" of the natural "moving picture show" we were about to witness. We drove around the various parks and college grounds, up one vista of beauty and down another, each apparently more profusely glorious than the one before. We began to exclaim, and we continued to exclaim. The eyes of my three "girls" were nearly popping out of their sockets, and mine were worse. "Hold on," said Dr. Clark, after the first half hour, "You must save some of your adjectives—we have much in reserve for you yet."

We drove up around Diamond Head—about which I wish to say something very particularly later on—then down into Kapiolani Park and Waikiki Bathing Beach—the most perfect bathing resort in the world. We dismounted in the park to visit the famous Aquarium, a sight of which used up our adjectives again. Most of my readers have seen the brilliant plumage of tropical birds and have been compelled to admire the artistic handiwork of nature in this regard, but here we saw in the water a greater variety of fishes than we had ever seen of birds, and with colorings as vivid and varied as were ever produced by the ingenuities of nature or of art. And the effect was immeasurably heightened by the sheening of the light along the graceful sides and curving sweeps of the ever-moving tribes through the sparkling water. In some the blending of the colors was gradual—shading mysteriously from one to another as the merging of a delicate pink into as delicate a yellow, while in others the line of demarcation was as distinct as if drawn with a rule. It is futile to attempt a description of any of these fish but I will give in brief the markings on a single specimen—the Kihikihi. The nose was grayish white along the sides with a snip of black on top and a larger patch of black beneath. Over the bridge was a saddle of red bordered by a deep black line. Back of the white was a broad band of black out of which sprang a fine bit of white. Next to the black was gray, then yellow, then black, then a narrow strip of palest blue, then black, then yellow, then blue, then black and the end of the tail was white striped delicately with black. Extending up gracefully out of the back and carrying into it for some distance the basal colors was a plume waving far out behind the fish and floating in the water as it moved more delicately than any possible feather on any possible bird. Any one of these specimens would cause a sensation if seen elsewhere, and there are not merely a dozen or so of them but there are approximately 100 different varieties. And the shapes vary as much as the shades, and the habits of the fish—as illustrated by their movements—are as varied as their numbers. Such a display I never imagined could exist. It could not be reproduced by art, and I doubt if it could ever again be duplicated by nature. It is the one and only—the original and the ultimate riot of color and of form.

Please do not think I have exhausted the aquarium—I have merely exhausted my vocabulary.

C. N. J.

(To be continued.)

BOOK REVIEWS.

DENTAL JURISPRUDENCE: THE LAW RELATING TO DENTISTS AND THE PRACTICE OF DENTISTRY. By William E. Mikell, Professor of Law in the University of Pennsylvania. 12mo, 570 pages. Cloth, $2.75, net. Lea & Febiger, Philadelphia and New York, 1912.

This is the first book on this subject which we recall since the volume of Dreyfuss many years ago, and it is time that something authoritative was published, not only for the benefit of the many young men who are just entering the profession, but for the practitioner of long standing who too frequently has very little idea of his real status in relationship with the people he serves. Fortunately in America we do not see so many cases of damage and malpractice suits brought against dentists as they have in Europe, but it is only a reasonable precaution to take for a practitioner to thoroughly inform himself on his obligations and rights before the law. This the present volume enables him to do and we highly commend the book to every dentist and dental student.

LECTURES ON GENERAL ANESTHETICS IN DENTISTRY, ADVOCATING PAINLESS DENTAL OPERATIONS BY THE USE OF NITROUS OXID, NITROUS OXID AND OXYGEN, CHLOROFORM, ETHER, ETHYL CHLORID AND SOMNOFORM. By William Harper De Ford, A. M., D. D. S., M. D., Dean and Professor of Oral Pathology and Anesthetics, Drake University College of Dentistry; late Professor of Oral Pathology, Surgery and Hygiene, College of Dentistry, State University of Iowa; formerly Professor of Oral Pathology, Drake University College of Medicine; Member of National Dental Association; Member and ex-President

Iowa State Dental Society; Member the New York Society of Anesthetists, Honorary Member Missouri, Kansas, South Dakota and Colorado State Dental Societies, and the St. Louis Society of Dental Science; ex-President Iowa State Board of Dental Examiners, etc., etc. Second edition, with illustrations. 312 pages. Published by Lee S. Smith & Son Company, Pittsburgh, Pa., 1912.

The fact that a new edition of Dr. De Ford's book was demanded is evidence enough of its worth. When it first appeared several years ago it excited much interest and now that the book has been revised and brought down to date it will prove even more useful than before.The charge has frequently been made that administering anesthetics was not carefully enough taught in our colleges, either dental or medical, and it is surely a fact that the average practitioner who attempts to administer anesthetics is not as thoroughly informed on the principles of anesthesia as he should be. Anything which will add to the knowledge of the profession on this important subject should be welcomed, and Dr. De Ford's book comes within this category.

ORAL SURGERY—A Text-Book on General Surgery and Medicine as Applied to Dentistry. By Stewart Leroy McCurdy, Professor of Anatomy and Oral Surgery, School of Dentistry, University of Pittsburgh; Chairman of Section on Stomatology, American Medical Association (1910, 1911, 1912); Orthopedic Surgeon, Presbyterian and Columbia Hospitals, etc., Pittsburgh. Author of "Manual of Orthopedic Surgery," "Anatomy in Abstract," "Emergencies in Abstract," "Arthrosteopedic Surgery." With 228 illustrations. 469 pages. Published by D. Appleton and Company, New York and London, 1912.

This is the first of a series of text-books which has been planned by the Commission on Text-books of the Institute of Dental Pedagogies. The work shows great care in its preparation, and will commend itself to students. The illustrations are by no means hackneyed, and many of them are unique and striking. The book is divided into two parts, viz: General Surgery, and Oral Surgery, the latter naturally embracing the larger portion of the book.

The chapters on "Tuberculosis of the Face, Mouth and Jaw," "Syphilis of the Mouth," "Ankylosis," and "X-ray in Oral Surgery," are particularly interesting, while the whole book will well repay a careful study. There is an appendix with questions on each chapter so that the student may read up and be able to answer questions for examination quite readily. This is an admirable method of preparing a student for a written examination, but no student should content himself with a mere parrot-like recitation of answers on any subject. After all clinical demonstration is the only method of teaching students practical oral surgery, as it is of most other subjects in the dental curriculum. Books are very valuable as a basis of study and students should be encouraged to read them more than they do, but they should not depend solely on written questions and answers for their mental pabulum when it comes to the diagnosis and treatment of disease. This book will be of great service in placing before the student's mind many cases of unusual interest and we cordially commend it.

Rubber Hand Stamps and the Manipulation of India Rubber. By T. O'Conor Sloane. Third revised and enlarged edition. 175 pages, illustrated. Price $1.00. Published by The Norman W. Henley Publishing Co., New York, 1912.

This book gives full details on all points, treating in a concise and simple manner the elements of nearly everything it is necessary to understand for a commencement in any branch of the India rubber manufacture. The making of all kinds of rubber hand stamps, small articles of India rubber, U. S. Government composition, dating hand stamps, the manipulation of sheet rubber, toy balloons, India rubber solutions, cements, blackings, renovating varnish, and treatment for India rubber shoes, etc.; the hektograph stamp inks, and miscellaneous notes, with a short account of the discovery, collection, and manufacture of India rubber are set forth in a manner designed to be readily understood, the explanations being plain and simple. Including a chapter on rubber tire making and vulcanizing; also a chapter on the uses of rubber in surgery and dentistry.

PRACTICAL HINTS.

EDITED BY J. E. SCHAEFFER, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, THE DENTAL REVIEW, 55 State Street, Chicago, Ill.)

To Abort an Alveolar Abscess:—Use ether chloride spray on the gum of an affected tooth to abort incipient alveolar abscess, which stops the throbbing pain and often will abort the abscess.—*Michael Diratsouyan, D. D. S., Smyrna, Turkey in Asia.*

To Clean Medicine Bottles:—Put in them little bit HCL+ HNOz and shake them for a few minutes, then pour the acids out and wash the bottle with sodium bicarbonate, then rinse with water.—*Michael Diratsouyan, D. D. S., Smyrna, Turkey in Asia.*

A New and Positive Method of Cauterizing with Silver Nitrate:—In order to have a rapid and positive effect whenever cauterizing surfaces of decayed dentin or defective spots near the gingival margin, dry the surface, then apply Silver Nitrate, and expose to direct sunlight. At this point use a large magnifying glass to focus the direct rays of sun onto the cauterized surface. It will turn black immediately.—*W. O. Fellman, D. D. S., Oak Park, Ill.*

The Ill-Kept Mouth:—The ill-kept mouth is a breeder of disease germs, through it pass the microorganisms that produce the diseases from which the human family suffers. It is in the neglected mouth that grow the organisms giving rise to dental caries with all its complications. As a remedy we must prevent the accumulation of debris, and the production of conditions that make the mouth a hotbed for the noxious germs of general and contagious diseases like consumption.—*Geo. A. Roussell, D. D. S., Paris.*

Locating Points on a Plate Producing Irritation:—Upon inserting a plate on the lower jaw, the great number of flat, narrow ones, I say to the patient, it is far more likely to irritate the gums than an upper set. If it does irritate, you cannot eat. Don't come back with the teeth in your pocket, and say "you cannot eat with them," for I tell you now you cannot, but come at once with the teeth in your mouth for a day, so I can see the irritated spot. But while this is readily seen it is not always easy to locate the exact spot on the plate. To do this place a bit of moist whiting with a spatula, on the spot, place the plate in place, and on removing it, the location is seen. Use a small carborundum stone to relieve it.—*L. P. Haskell, Chicago, Ill.*

The Use of Cement with Amalgam:—Experiments with amalgam in cavities so made that the fillings when completed could be removed without destroying any part of the cavity surface show that it is extremely difficult to fill a cavity with amalgam that will seal the margins and stop decay. Therefore I consider it good practice to use soft cement in every cavity to be filled with amalgam. I use just enough to cover the cavity surface, removing any surplus with an instrument before starting to use the amalgam, then begin with the amalgam and be extremely careful to pack well, you need not be alarmed at the cement that oozes out at the margins of cavity as it may be removed and the mixture does no harm. This method in my practice gives good service and amalgam fillings may be made that no man need be ashamed of.—*Frank J. Ryan, Chicago, Ill.*

Bands and Dowels in Crown Work:—To band the necks of teeth in crowning, without qualms of concience:—Avoid any study or knowledge of the anatomical form or significance of the gingival line or of the pathology of the tissues in that region. This preparation for your work will qualify you to advocate all-gold shell crowns and banded porcelain crowns, "invisible bands" and such.

To adjust a crown so that the root will split:—Whether with or without a band use a thick dowel less than half the length of the root. The shorter the dowel the more likely it is to either split the root or loosen when latteral stress is applied to the crown.

To initiate gingivitis and pyorrhea upon the root of three teeth: —Apply a banded crown to the middle one, after grinding the labial half of the root beyond the gum margin to have the band invisible. —*W. C. Gowan, D. D. S., Peterborough, Canada.*

Neuritis:—A somewhat unusual type of infection is that which involves the inferior dental nerve, giving rise to a localized neuritis. The neuritis may be caused by arsenic or infection. There are two diagnostic elements in the symptoms of this lesion. First, the intensity and chronicity of the pain, and second, the sensory phenomena in the tissues supplied by the terminal branches, the incisor and mental nerves. In two cases which recently came under our observation, one was caused by arsenic and the other by infection. In the first case arsenic had been applied to the pulp of the lower right third molar. Nothing unusual occurred until the pulp had been removed and a bland treatment applied in the usual way. A severe pain developed extending over the right side of the jaw and radiating to the ear and temporal region. This persisted for ten days, when it gradually subsided under treatment. At the present time the pain has entirely disappeared. A slight burning sensation and analgesia in the right half of the lower lip persists. This also will gradually disappear.—*F. B. Morehead, M.D., D.D.S., Chicago.*

Aluminum:—Having used aluminum for twenty years, I had recently my first evidence of injurious results from the secretions of the mouth.

A patient called with a plate I had made and she had worn eighteen years, and it was entirely dissolved, so she was using simply the rubber covering the ridge. Dr. Allport used to say a patient "could wear a chip in the mouth if they only thought so," and this almost demonstrated it.

About the same time another patient called with an aluminum plate worn a year, and here was a remarkable condition of things. Many blisters appeared, some showing on both sides of the plate. The query arose what could have caused them?

Blisters sometimes occur in a gold plate, but only when annealed, and owing to some defect in the gold ingot.

The aluminum was not annealed as it was the soft metal. There is the mystery; what was in the metal which could cause its expansion into several blisters, some showing on both sides and not easily punctured?—*L. P. Haskell, D. D. S., Chicago, Ill.*

Shrinkage of Inlays and How to Prevent:—From observing inlay work among students, and also what little experience I have had myself, I have noticed that the operator is quite frequently inconvenienced by shrinking, especially when the cavity involves three or more surfaces.

One instance of such trouble was in my technique work. This was a mesio-occlusal-distal. The first three inlays were cast with sprue attached to one contact point. Each time there was a lack of gold at the gingival of the opposite side—so much so that the inlay could not possibly have been burnished over the margin—while the rest of the cast was perfect. The fourth time the sprue was placed in the middle of the occlusal with the result that there was just about half the amount of shrinkage on both proximal surfaces at the gingival margin as on the side of the first three castings. The inlay being of pure gold was, however, burnished over the gingival margin with some difficulty.

A few days ago the writer had a case in which the inlay was of a five-surface character. Here a suggestion, that was given to me last year, was made use of, but which apparently few seem to know about. A small bow of wax was attached to two widely separated points on the inlay wax model—the mesio-lingual and disto-lingual cusps. The sprue was then inserted in the middle of the wax bow, in this way making the gold run into the mould from two points. When cast, this inlay went to place at every point, showing the value of this method of casting large inlays.—*W. F. Abbey, Senior Student at the Chicago College of Dental Surgery.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of $2.00 an inch.]

ARIZONA DENTAL SOCIETY.

The following officers were elected at the meeting held October, 1912: President, Dr. J. A. Messinger; Vice-President, Dr. L. W. Downs; Secretary-Treasurer, Dr. H. H. Wilson. The Society voted to join the National Dental Association in a body.

NORTH DAKOTA BOARD OF DENTAL EXAMINERS.

The next meeting of the North Dakota Board of Dental Examiners will be held in Bismarck, North Dakota, January 14, 1913, and continuing four days. All applications for examination must be in the hands of the secretary by January 4th, 1913. No other meeting will be held until July 8th, 1913. For further information apply to F. A. Bricker, Secretary, Fargo, North Dakota.

MINNEAPOLIS DENTAL SOCIETY.

The Alumni Dental Society of Marquette University, Milwaukee, has communicated to us the rather disconcerting fact that the only dates on which they can possibly secure the building they desire for the holding of their meeting are January 24th and 25th, the dates advertised for our clinic. Being anxious to promote the greatest harmony in the work of all dental organizations, we have agreed to change the date of our meeting. Our meeting will now be held on Friday and Saturday, January 17 and 18, 1913. C. De Forest Davis, Secretary.

INDIANA STATE DENTAL ASSOCIATION.

The fifty-fifth annual session of the Indiana State Dental Association will be held in the Claypool Hotel, Indianapolis, May 20, 21, 22, 1913. The officers of the association recently met at Indianapolis and perfected plans for a three-days' "Post Graduate Course." The very best instructors and specialists are being secured for each day. The course will be as follows: Tuesday, "Humanitarian Dentistry"; Wednesday, "Preventive Dentistry"; Thursday, a. m., "Prosthodontia"; Thursday, p. m., a great table clinic. The clinic will be held in the hotel. No tuition fee for the members of the association or visitors from outside the state who are in good standing in their state association, but all others desiring to take this course must arrange their tuition fee with the secretary.

Otto U. King, Secretary, Huntington, Indiana.

RECENT PATENTS OF INTEREST TO DENTISTS.

1024152, Method and means for producing dental plates, Henry J. Smith, Philadelphia, Pa.
1024153, Dental plate, Henry J. Smith, Philadelphia, Pa.
1024773, Means for stacking toothpicks and the like, Albert H. Hall, Peru, Maine.
1024774, Mechanism for stacking and conveying toothpicks, Albert H. Hall, Peru, Maine.
1025751, Tooth-brush, August O. Kretzschmar, Endicott, N. Y.
1026494, Carborundum-dresser, A. C. Champagne and J. N, Brahn, Jersey City, N. J.
1026564, Electric water-heating syringe, Harry M. Crawford, Lima, Ohio.
1026081, Waste-cotton container, Louis P. Dorais, Eureka, Cal.
1026213, Artificial tooth and crown, Joseph Kohn, Philadelphia, Pa.
1026186, Cord or cable supporting bracket, John V. Trenaman, New York, N. Y.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.